

The **MINING** **CONGRESS** **JOURNAL**

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Contributors

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JANUARY

1934



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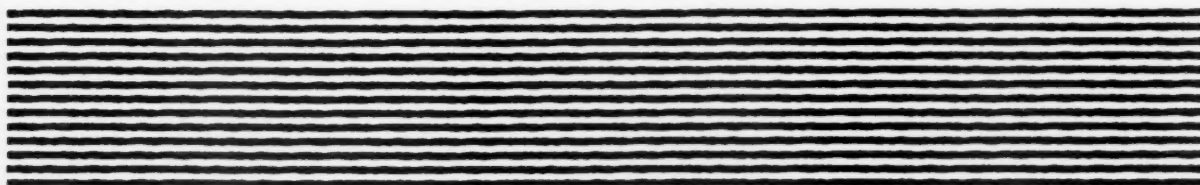
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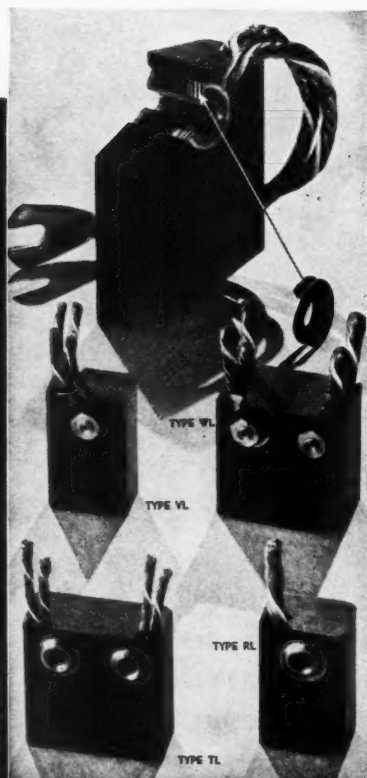
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THE MINING CONGRESS JOURNAL

JANUARY

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The 30-Hour Week

IN 1930 the average number of employment hours per week of all wage earners in the manufacturing and mechanical industries was 48.4. The average number of persons so employed was 8,838,743. To have produced the same amount of commodities on a 30-hour week basis would have required 14,141,989 workers—a difference of more than five million additional workers. At that time the total number of unemployed in the manufacturing and mechanical industries of the country, according to statistical reports, was approximately one million men. Granting the total employment of all workers attached to the industry, there would have been a shortage of commodities to the extent of 44 percent of the goods produced and consumed during that year.

In that year exports and imports were just a little above normal; no excessive surplus of commodities was accumulated; consumers' demands kept pace with production, and unemployment was at a minimum. Production was just far enough ahead of consumption to protect consumers against unreasonable prices. This estimate covers seventy billion dollars of production and the greater part of the merchandise which reach the consumer through the channels of commerce and represents as nearly as may be the actual consumption of goods in a normal year.

What would have happened to the consumer if only five-eighths of that production had been available? What worker would be willing to go hungry and bare for four and one-half months each year in order that he might have two hours of daily additional leisure?

This condition of scarcity would not only make impossible a full supply of commodities to all workers, but would enormously enhance the price of these commodities to all consumers. Prices always advance when the supply is less than the demand. A perfect balance between supply and demand will be difficult to establish, but surely it will be unwise to so limit production by law as to create a scarcity of the necessities of life.

With the latest and most improved mechanical equipment, a 30-hour week might be feasible. With the present mechanical equipment of industry, a shortening of hours of service is possible and desirable. The 40-hour week, which is being largely provided in the codes under the National Recovery Administration by agreement between employers and labor leaders, gives promise of creating a proper balance between production and consumption in normal times. If these hours

accomplish too great a production to meet the present under-consumption demand, the Administration has power to require a further reduction. The NRA will be generally supported in establishing such rules as will so spread employment as to provide a living for all workers, but this limitation must be subject to quick adjustment whenever the supply of the necessities of life are less than required to meet consumption demands.

It is hard to visualize the complications of the enormous industrial machine which makes available to all consumers at a reasonable price almost at his front door the thousands of different articles of commerce. A disturbance of any part of the long chain of activities from the mine or other source of raw materials to the consumer may mean a break-down of the entire system, so far as a particular necessity is concerned. No legislator can believe that he can, by law, establish a rigid control of the vast machinery of production, fabrication, and distribution without so disturbing commerce as to work hardship upon all consumers. There is general approval of the shortest hours of service which are possible without curtailing production to a point where competition will lose its power to protect the consumer against exorbitant prices.

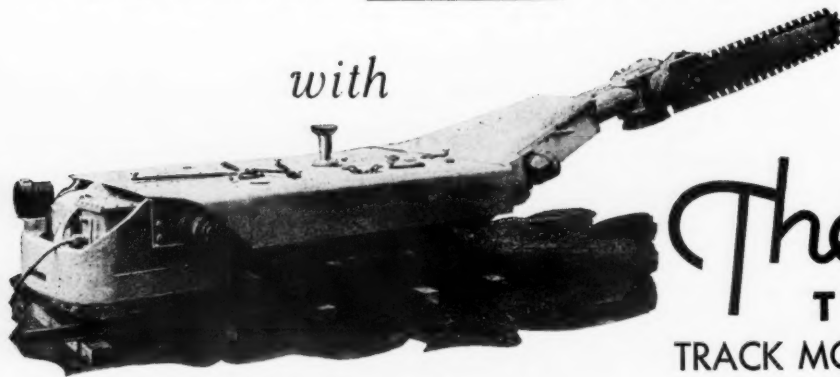
This relation is being constantly changed by improvements in mechanical equipment. If all plants in the country could be equipped with the very latest and most complete operating machinery, it might make a 30-hour week possible. This would require the scrapping of billions of dollars worth of high-grade equipment now in use by concerns struggling against a depression which has left them without means to purchase new equipment. This would be like scrapping all 1933 automobiles because the 1934 models are more effective and more cheaply operated. Such interference with the management of business, such disturbance of the supply of necessities, such attempt to standardize all lines of production, no matter how different the conditions under which they operate, must and will result in confusion and hardship to both producer and consumer.

"It is perfectly possible," says a correspondent, "to operate American industry on a 30-hour week or a 20-hour week. It depends only on the price that people are willing to pay for their leisure and how much goods and services they want to get out of the industrial system. They can have as low a standard of living and as much leisure as they like."



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The MINING CONGRESS JOURNAL

VOLUME 20
NUMBER 1



JANUARY
1934

A Journal for the entire mining industry published by The American Mining Congress

THE NEW YEAR AND MINING

AS a new year appears the mining industry finds itself at least on the way out of its difficulties. We are still far from the top, but the trend is distinctly up. Papers presented to the annual December meeting of The American Mining Congress sounded a note of optimism that has not been heard for several years.

Mining has been involved in a tremendous readjustment period, facing, on the one hand production and financial loss, and on the other, government regulation and uncertain political action. The various units of the industry have been absorbed in a gigantic effort to conform to the rules laid down by NRA. Many have succeeded in developing Codes of Fair Competition, but many others are still trying to reconcile differences.

The growing momentum of political action has developed a series of problems that will require the gravest thought, and the most complete and intelligent cooperation. We are faced with a new set of conditions. We are embarked upon an entirely new road. Many familiar signposts have disappeared, and others are but dimly visible. Apparently we are getting our feet upon the new road, and confidence in the future is returning in splendid measure.

The prospects for 1934 are brighter, and while there are many obstacles to be overcome, the industry is facing them with hope and courage and confidence.

THE NEW CONGRESS

JANUARY 3 ushers in the first of the Congresses under the lame-duck amendment to the Constitution. It brings a surprisingly young group of men to the legislative helm. The preponderance of the men in the House are in their early forties. It has been a much heralded Congress. Rumblings have been constant as to what will be done, and many rumors have found their way to the ears of industry.

As a matter of fact this Congress will not be radically different. It is so politically balanced as to make for harmonious action. Many of the proposals to be brought before it are radical, and are designed to "saw the legs off the big fellow and graft them onto the little fellow." A poll of Congress indicates that the things that will be given greatest consideration are (1) ways and means of securing new revenue through taxation to meet the administration's recovery program; (2) a real effort to pass the 30-hour week, plus many proposals for strengthening the labor provisions of the Codes; (3) an effort to remonetize silver or otherwise stabilize currency; (4) efforts to liberalize, and to make more binding, the provisions of the Securities Act.

Senator Logan, in his address before the American Mining Congress, urged mining men to consult him; to make their wants known; to place the facts before the Mines and Mining Committee of which he is chairman. That has always been the attitude of Congressional members toward the American Mining Congress. They have always welcomed information, cooperation and assistance in proposals to legislate for the industry.

The New Congress is here. It is a real factor in our national recovery. Whatever its action upon matters of importance to mining, depends, we believe, wholly upon how comprehensively the industry informs them as to its needs. If mining men permit Congress to legislate blindly, they can blame only themselves—and if Congressmen act upon the information that is available to them, they are to be com-

mended not criticized. Help the New Congress; help the industry by cooperating upon all the issues involved.

THE BUREAU OF MINES

THE BUREAU, child of the mining industry, is in a bad way. At the moment its activities are scattered in various buildings in Washington, and it is being relegated to the least important of the government agencies. Under the circumstances, it is impossible for it to serve the mining industry efficiently or adequately.

This is a situation that should not and must not obtain. The mining industry is second only in national industrial importance to agriculture. It is being treated without consideration of that importance. A slight comparison may give part of the picture. The annual appropriation for the Department of Agriculture for the year 1933 was \$100,209,091. Even its least important Bureau received consideration not accorded the Bureau of Mines, which had its appropriations cut to the very bone.

The American Mining Congress has appointed a national committee representative of the practical operating end of the mining industry, which is headed by Mr. Eugene McAuliffe, President, Union Pacific Coal Company, to confer with Secretary of the Interior Ickes, under whose jurisdiction the Bureau will shortly be placed. The committee will make recommendations, and will endeavor to arouse in the minds of the mine operators the importance of cooperation with the Bureau, and to point out to them what the Bureau can do for them.

Certainly there must be no more apathy if the Bureau is to be of the service the industry requires. This is "our child" and it is being treated most shabbily. We urge your interested cooperation.

THE PROGRAM FOR LABOR

UNLESS all signs fail, the present Administration is decidedly "Labor-Minded." For the first time in many years, labor is sitting at the head table. It occupies a seat of honor. To be fair, we should also point out that the other seat of honor has been accorded to capital and management. It seems to be obvious that the Administration intends to be the kind, but firm, parent in an effort to straighten out the battle that has been waged between capital and labor for many years.

No one can find fault with the purposes of the plan. But it is essential that the "parent" be impartial; that no special advantage be given to one or the other. At the moment, labor has an advantage. It is not legally responsible for its acts. It has the power to force industry into serious difficulties, and not be obliged to pay the piper.

Secretary Perkins has announced a 10-point program, which she hopes to put through during her administration. Labor is asking for permanent limitation of working hours through the 30-hour week; for a standard minimum wage; for old age pensions; for unemployment reserves; for adequate workmen's compensation; and for stronger teeth in labor laws.

Capital is asking only for the chance to "make good" as it has in the past. It has not rebelled seriously, as a whole, against the restrictions placed around it by the Codes of Fair Competition. It needs the aid of the administration, of labor leaders, and cooperation within its ranks. It asks for a fair deal and an opportunity to present its side of the questions involved.

Steel—

Benefactor, Not Godfather

by Donald B. Gillies*

THE purpose of this address is to accurately portray the human phase of the steel industry—past and present. Unquestionably misunderstanding exists, for during the past years, and particularly in the last few months, the steel industry has been the target of a great deal of unfavorable comment on the part of numerous individuals and various organizations. The public has been led to believe that the steel companies are heartless corporations, harsh and selfish in their attitude toward labor, operated along monopolistic lines and feeding upon fat profits. Actually in no trade is competition more severe, and in recent years its earnings per dollar of investment have been among the lowest of all industries, with, of course, huge losses during the last few depression years.

There are two simple and natural reasons why the steel industry has been singled out for this sort of attack.

The first is its sheer size. Any developments in connection with an industry as large as the steel industry are of importance to so many people that they are properly news for the newspapers.

The second reason, I believe, lies in the reluctance of the steel industry, in the past at least, to take the public into its confidence and tell the country the facts, especially in the field of relationships between management and employees. Consequently, there is prevalent today a curious and widespread assortment of misinformation and distorted facts concerning the steel industry.

Perhaps the industry's attitude of reticence was justified in the past. It has gone about its own business quietly and efficiently, without feeling that it was called upon either to pat itself on the back or to defend itself. It has treated its employees fairly as a matter of course, and has not considered it necessary, or in good taste, to exploit its own accomplishments in this direction.

Today, however, the situation is different. Under NRA, a corporation no longer does business in private. Relationships between management and employees have become matters of broad public interest. In the steel industry in particular, employee-employer relationships have been brought into the limelight—and not always in conformity with the facts.

In fairness to the industry and to the public, therefore, I believe that the steel industry's record and policy with respect to employee-employer relationships should be clearly and publicly stated. It has a record, in my opinion, which is not excelled from the standpoint of the welfare of the workers themselves, by any other large industry in the United States.

* President, The Corrigan, McKinney Steel Company, before the Thirty-sixth Annual Convention of the American Mining Congress, Mayflower Hotel, Washington, D. C., December 15, 1933.

I propose today to review very briefly some of its most important features, and to comment for a moment upon the situation with respect to employee relationships with which we are faced at the present time.

First of all, I shall read you two paragraphs of the report of the board of directors of the American Iron and Steel Institute on the operation of the code of fair competition of the iron and steel industry during the 90-day trial period specified in the code, made to the administrator of the National Recovery Administration at Washington. These paragraphs read as follows:

"Between the months of June and October, based on the reports of the 146 identical companies representing about 90 percent of the employees of the industry * * * the increase in total number of employees was approximately 21 percent. The decrease in average hours of work per week per employee was nearly 20 percent. The increase in total wages paid was more than 22 percent. It has been estimated, on the basis of 60 percent rate of operations, that this increase in wages represents a total additional cost to the iron and steel industry of approximately \$100,000,000 per year. At the effective date of the code, the estimated rate of operations for the industry was 53 percent * * * In the week of November 6 to 11, the actual rate of operations * * * was 25 percent."

Now I want you to consider carefully the astounding nature of the information which is packed into those few words.

Here is an industry—one of the largest in the country—which, during that three months' period, dropped in volume of business from 53 percent of capacity to 25 percent of capacity—and yet at the same time added 21 percent to its number of employees, cut its working hours per employee 20 percent, and moreover increased its rate per hour per employee by 20 percent, and expanded its total wages over 22 percent.

I would challenge any other industry in the United States to present a more succinct and complete example of adherence to the principles of the National Recovery Act. These changes in hours, wages, and conditions of employment directly affected 416,000 employees. This was the number employed in October compared with 338,000 in June. In 1929 when operations were at 85 percent to 89 percent of capacity, employment in the industry was 420,000 as estimated by the National Recovery Administration.

Thus under the Steel Code the industry, operating at 37 percent in October, had given work to practically as many employees as were on the payrolls in boom times. Average hours of work, of course, were not as great because of depression conditions. I think it is safe to say

that never before in the history of the United States has a single industry, in so short a time, accomplished so sweeping an improvement in the employment conditions of such a large body of workers.

The point which I wish to emphasize today is that this swift major adjustment might have been impossible had it not been for the long background of employee relationships and regard for employee welfare which have obtained in the steel industry for years.

In actual fact, the steel industry was prepared for acceptance of the ideals of the NRA, so splendidly conceived by President Roosevelt. Let there be no mistake about it—the steel industry stands wholeheartedly with the President in his great effort to bring about recovery and increased employment. Cooperation with this effort to the end of contributing to its success and full compliance with NRA provisions are dominant policies in the steel industry today.

In looking into the past history of employee relationships in the industry, it is important to realize the enormous number of people affected. At present, over 400,000 people are employed directly by steel plants and mills. These are the men directly affected by the provisions of the iron and steel code. In addition, about 30,000 miners are normally employed in the iron ore mines. There are some 10,000 men operating ships and barges on the lakes which are engaged largely in the carrying of ore. Of the 493,000 people employed in the coal mines in 1930, the last date for which official figures are obtainable, we may estimate that fully 65,000 are furnishing coal for iron and steel operations. We may add 2,000 more employed in the production of limestone for blast furnace use. This makes a total of more than 520,000 people who have work because of the existence of the iron and steel industry—not including railroad employees, men employed in industries furnishing material and supplies, and so forth.

When we speak of over 500,000 employees, it is realized of course that the well-being of a far greater number of dependents is involved. Families among steel mill employees are traditionally large, and in all probability the customary ratio of one worker to a family of five is too low. It is evident that at least 2,500,000 men, women, and children look to the steel industry for their daily existence.

Now, anyone who knows anything about the conduct of business at all must understand that no industry dealing directly or indirectly with so many people could exist without having long since formulated, and put into execution, well defined plans and policies with respect to employee welfare and employee relationships.

Let us consider first the basic question of wages and hours.

The history of the industry in this connection has been one of constant reduction of hours and increase in wages. Few people realize the surprising extent of the trend in this direction, over a period of years, long before the advent of NRA.

Consider the following figures, for instance, from the annual report of the United States Steel Corporation for the year ending December 31, 1932: Average daily earnings of employees of the corporation were, in October, 1913, \$2.93; in October, 1921, \$4.60; in October, 1932, \$4.81. This year, with the advent of the Steel Code, hourly earnings have shown a still further increase.

Now as to hours. In 1923 the 12-hour day gave way to the 8- and 10-hour day. This year—1933—the 10-hour day has given way completely to the 8-hour day, and an average weekly maximum of 40 hours. At the same time that the number of hours worked per week per employee was decreased to approximately 40 hours, average earnings per hour increased 22 percent. With the return of more normal operations, earnings of individual employees will increase while their leisure will be greater.

During the months of September and October the 10-hour day was gradually and almost totally eliminated throughout the industry in favor of the 8-hour day, and the employees affected received an additional hourly wage increase of approximately 12.5 percent. This move was taken voluntarily by the industry in spite of the heavy financial burden which it would impose and in spite of the fact the code does not make such a move mandatory until the industry shall be working at least 60 percent of capacity.

Thus, working hours of steel mill employees have decreased by at least one-third, while rate of pay has almost doubled.

As early as 1906, the United States Steel Corporation undertook the active organization of welfare and safety work, which rapidly developed into many phases, and spread to almost all branches and companies of the steel industry.

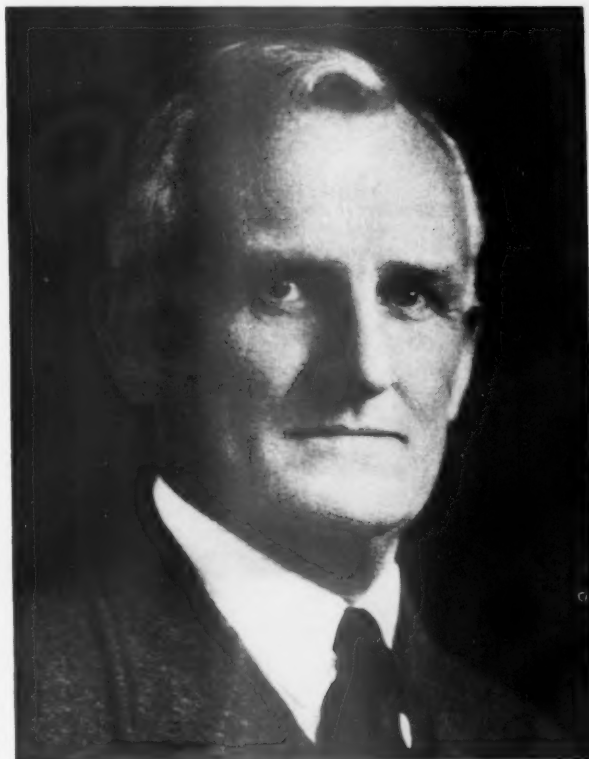
The corporation possesses a remarkable record of accident prevention work, and since 1912 its disabling accident rate per 100 employees shows a decrease of over 88 percent.

Other steel companies have likewise accomplished important results in this same direction and at the present time adequate safety work is part and parcel of the daily routine of every steel plant in the country.

In the Bethlehem Steel Company where an accident prevention program has been practiced over a long period of years, the average frequency of lost time accidents has been so reduced that the average employee is confined in a hospital not more than once in a lifetime of service compared with once every 18 months when the effort was started.

In the Corrigan, McKinney Steel Com-

pany, we have taken safety seriously, and the effectiveness of the safety educational campaign and accident prevention work is shown by the fact that in the National Safety Council, Metal Section Safety Contest, Corrigan McKinney has for the past three years been awarded the first place trophy for the best accident reduction record among major steel companies competing in this contest. Prior to the three years we were awarded certificates for second place in safety work. We have made a record of 497 days without a lost time accident, during which period the plant worked 5,383,468 man hours. Sixteen out of 24 departments in our plant to the present day have gone over two years without a lost time accident.



DONALD B. GILLIES

Pension plans and insurance plans have been widely developed throughout the industry. At the close of 1932, for instance, the United States Steel Corporation showed the lives of 151,909 employees were insured by group insurance carried by them through clubs and other employee organizations. At the same time, 11,684 employees were receiving pensions under the provisions of that corporation's pension plan. Insurance plans have continued to make headway in spite of the last three years of depression. Our own company, for instance, only four weeks ago inaugurated a plan of group life insurance and health and accident insurance, embracing practically 5,000 employees who are participating in the benefits of the plan. This plan provides valuable insurance benefits at a very low cost to the employee.

In the important steel center of Youngstown, Ohio, large strides have been made in welfare and safety. Dur-

ing the long depression years extensive relief work has been carried on.

Starting in 1931, the Republic Steel Corporation appointed spread work committees and carried on an effective program to equalize earnings. Republic was one of those steel companies which have done a large amount of repair work, not immediately essential, in order to give work. This company also encouraged company gardens and sold fuel on a liberal credit basis to employees, even though they were not working.

The Youngstown Sheet & Tube Co. also has a commendable record of general welfare and safety, of promoting employee gardens, of work spreading, of housing communities—all on terms which proved a Godsend to employees during the days when little work was available.

Realizing that they must assume a fair share of responsibility for the living conditions of their employees, many steel companies have developed employee housing projects. In fact, some companies have actually built up whole communities for their workers; such as Dundalk at the Sparrows Point plant of the Bethlehem Steel Corporation and the Weirton, W. Va., plant of the Weirton Steel Company, to mention only two outstanding examples.

In some cases houses were sold to employees at cost, on a land contract basis. In other cases homes were rented to employees at modest rental rates. By this plan living conditions of the employees were raised to a standard much higher than would otherwise have been the case, although of course employees exercise a free choice in availing themselves of these advantages.

In many companies a steady progress of education is conducted, including training of apprentices, foremen and junior executives as well as library facilities, Americanization work, and the like.

Through activities of this sort, carried on over a long period of time, the executives of the steel industry have gained a clear and direct conception of the desires and the needs of their employees, and have developed a thorough working knowledge of employee-employer relationships, with mutual understanding on both sides.

In fact, some steel companies, in this respect, anticipated by many years some of the principles of the National Recovery Act. The Bethlehem Steel Corporation and the Youngstown Sheet and Tube Company, 15 years ago, inaugurated employee representation plans embodying in substance the collective bargaining principles of NRA. These plans have functioned well ever since they were founded, and are functioning smoothly today. Similar plans have been adopted by most other steel companies and are in successful operation. Employee representation has proven in practice the most practical and satisfactory way, from the standpoint of both employees and management, to meet the requirements of collective bargaining.

Leaders in the steel industry, without

any important exception of which I am aware, have given tangible and impressive evidence at a cost of many millions of dollars that they take seriously and conscientiously their responsibilities to the men who toil in the shop and their families.

Thus the steel industry faced the advent of the depression, in the fall of 1929, with a valuable backlog of experience in employee welfare—experience which from 1929 to the present has proved invaluable both to employes and to the companies themselves.

Throughout the depression, the history of employee relationships in the steel industry has been one of spreading the available amount of employment and resources among the largest number of men.

In this connection I desire to again quote from the December 31, 1932, annual report of the United States Steel Corporation, as follows:

"Because of the continued low volume of operations during the year, the plan of alternating employes, adopted in 1930, was maintained throughout the year, resulting in distributing such work as was available among as large a number of employes as was practical.

"The following summary shows the extent to which service under this plan was given to employes:

Number of employes working full time (average for the year)....	18,938
Number working part time.....	139,094

"The plan of alternating employes, as above outlined, resulted in furnishing a share of available work to approximately 75,000 more people than would have been possible under full-time employment."

As conditions went from bad to worse, leading toward the low point reached in the spring of this year, it became constantly more and more difficult to keep employes on the payroll. Some, of course, had to be dropped entirely, but all sorts of devices were resorted to in order to give men a few days' work in each pay period. This interfered with efficiency of operation—but efficiency of operation had become a matter of secondary importance. Somehow employes had to be taken care of.

The point was finally reached when there was not enough employment available even by staggering working hours to the utmost to supply employes with the necessities of life. Strenuous measures became necessary. Garden projects were extended to the limit. Various relief agencies were set up. Companies and employes in many cases contributed to support of men for whom there simply was no work. Companies cooperated with city and county authorities in relief plans. In some cases work of a direct personal nature was undertaken. At one company, for instance, throughout an entire winter employes who were out of work were given a daily basket of groceries sufficient to enable them to live.

Then finally, in the spring of this year, the major crisis passed, business improved, and it was possible to put more men back to work.

With this background, adjustment of wages and hours in conformity with NRA provisions was, in a way, simply an extension of the trend toward higher wages and fewer hours which, on a long-term basis, had been evident in the industry for years, facilitated by the practical experience in adjustment of hours

and staggering employment which the steel companies had gained during the difficult years of 1930, '31, and '32.

I wish to emphasize this fact in particular, because there has been some disposition on the part of some organizations, and also on the part of the public, to regard the steel companies' compliance with NRA as a sort of victory gained by employes in a battle between labor upon the one hand and steel industry executives upon the other.

This is an improper interpretation of the facts. The steel industry entered into NRA with a full spirit of cooperation, and the final figures as to wages, hours, and employment give proof that the industry has carried out to the letter its support of the National Industrial Recovery Act.

That brings us to the present. Let us see where we stand.

We have added 22 percent to our payrolls since the Steel Code was put into effect. At that time the industry was operating at 53 percent capacity. We are now operating at about 31 percent.

Recently there has been a very modest upturn in prices of steel. At present many steel companies continue to show large losses. Under existing conditions a fair rate of profit is practically impossible.

The industry has recognized, first of all, its obligation to its employes. It must now, in turn, take stock of its obligation to its stockholders.

The total investment in the steel business of the country is approximately \$5,000,000,000. The stock represented by this investment is probably divided among at least a half million stockholders. The United States Steel Corporation alone at the close of last year had 237,915 registered stockholders. The holdings naturally run from a few shares each to thousands of shares. Steel stocks are to be found in the safe deposit boxes of hundreds of small wage earners, professional men, school teachers, and the like, who bought stock in the steel companies with the feeling that they were making a stable investment in a permanent, basic industry.

These people have a right to expect a fair return on their investment.

Returns on capital investment in the steel industry, throughout a period of years, are illuminating. A recent analysis of net earnings on aggregate net worth of leading steel companies of the country shows that the average rate of return for the 12 years, 1921 to 1932, inclusive, was 4.3 percent. In 1932 there was a loss of 4.3 percent. Rate of earnings naturally reflected broad variations in volume of production, and indicated, on the whole that profits in the steel industry materialize only when the industry is operating at 45 percent of capacity, or above, and that 80 percent of capacity—in past experience, at least—has been necessary before earnings reach 6 percent.

Bearing that in mind, consider once more the fact that we have just added 22 percent to our payrolls in the face of a drop from an operating rate of 53 percent of capacity to one of 25 percent of capacity.

We will continue to recognize the first and paramount obligation to our employes. Work and a decent living wage for as many people as we can possibly employ are accepted principles in the industry. Dividends on common and even preferred shares of most steel com-

panies have been stopped, but we cannot permanently forget our obligation to our stockholders. We must restore the steel industry to a profitable basis, where we can not only give labor its fair due, but also give a reasonable return to stockholders, to many of whom income from dividends may be no less important than wages are to workers.

Failure to do this can bring only one result. Were we to continue to operate without profit, reserves already sorely depleted would vanish, new financing would be impossible to obtain, and present capital would be withdrawn or depleted. There could then be only one outcome. Plants would be completely shut down and thousands of employes would be thrown out of work. No new capital is needed in the industry now to build or to expand capacity, but it is necessary to expand vast sums every year to keep plants and equipment in a state of repair and efficiency to meet an ever-changing consumer demand in normal periods and any exceptional requirements which a national emergency may impose.

This is not a matter of sentiment, not a matter of abstract theory or of personal desires—it is simply a matter of arithmetic. A dollar can not be made to go two ways at once.

A rising trend in steel production, accompanied by reasonable prices, sustained over a period of time, will prove the solution of the present dilemma. I believe that solution—at least in some encouraging measure—may be nearer at hand than we dared to hope a few months ago. Evidence is accumulating that steel mill operations have passed over their lowest point in the depression and that gradual improvement is probable over the coming months. There is a strong current of underlying confidence in the industry that demand and production of steel in 1934 will show a substantial gain over the year just closing.

Sources of Statistics in Mr. Gillies' Speech, in Order of Reference

1. Increases in employment and wages, decreases in hours and rate of operation, etc.—actual quotation from "Report of Institute to the Administration on Operation of the Code."
2. Number of employes affected—same source.
3. Number of miners in iron mines—Census of Manufacturers, 1929.
4. Number of men on ships and barges—Lake Carriers' Association.
5. Number of people employed in coal mines—1932 Statistical Abstract, page 712. Five and five-tenths of bituminous coal goes to steel plants for gas and steel coal. Sixteen percent of bituminous is used for coke (1932 Commerce Year Book). Seventy-five percent of coke is used by steel plants. On percentage basis, this makes slightly over 65,000 miners.
6. Figures on U. S. Steel Corporation employes' earnings—1932 Annual Report of Directors, U. S. Steel Corporation.
7. Date of Steel Corporation beginning welfare work—"Welfare Work in the Steel Industry," address by C. L. Close, U. S. Steel Corporation, May 28, 1910.
8. U. S. Steel figures on accident prevention—Annual Report U. S. Steel Corporation, 1932.
9. Expenditures for accident prevention, U. S. Steel Corporation—same as above.

(Continued on page 14)

The Position of Silver in the World[†]

by Hon. Key Pittman*

IN a short extemporaneous address I find it quite difficult to know how even to approach the silver problem. I think the great trouble about the silver problem is that it is generally written about by those who know nothing about the production and consumption of metals. They know all about the theory of economics, they are perfectly familiar with what we understand as monetary systems.

Another error that is made is the belief that no one is interested in this subject except the comparatively few producers of silver throughout the world. Now, if that assumption were true, it would be a great waste of time to bring a matter of this kind to the consideration of the American Mining Congress or to the Congress of the United States, or to a great gathering such as we had in London a few months ago where sixty-six governments were represented.

As a matter of fact, those sixty-six governments did not consider the question as only a commodity question. The United States, Canada, Mexico, Peru, Ecuador and Australia produce nearly all of the silver that is produced in the world. If the matter was of interest solely from the commodity standpoint then you would only expect those governments to be interested and not the rest of the sixty-six governments that were interested. Just that in itself is an answer to the unfortunately ignorant discussion of this matter purely from a commodity standpoint.

At London there were two things presented and they were presented on behalf of the United States. The first was a resolution dealing with the whole monetary standpoint. I had the honor on behalf of our delegation as a member of the Monetary Commission to present our monetary resolution. Probably because I presented it, most of the press of the world only took note of that part of the resolution dealing with silver. As a matter of fact, the resolution dealt with both gold and silver and was prepared before we left Washington, was discussed in the informal conferences held here in Washington between our government and the representatives of various governments who came here.

The gold part of that resolution was substantially this, as I remember it: "It is the sense of the governments represented at this conference that governments return to the gold standard measure of international exchange as soon as practicable."

The question arose as to what the word "practicable" meant. The Japanese delegate said, "It is not practical for us to return to the gold standard at the present time because we haven't the gold reserves and we can't obtain them. We desire, however, to return to the gold standard measure of international exchange as soon as possible."

Lord Hailshan arose, representing the delegation from England, he was a member of the Cabinet and as a member of the Cabinet, the Secretary of War, and he said, "If I understand the delegate from the United States he means by the word 'practical' that each government is to determine for itself the time of the return to the gold standard exchange and the ratio." As that was my understanding of it I accepted that amendment.

That was unanimously adopted by all of the sixty-six governments. As a matter of fact, under the rule of the League of Nations which governed that body, everything must be adopted unanimously. They take no votes on it because if there is an objection of a government to it, a substantial objection, and that cannot be overcome, realizing that you can't compel a government to do anything, that subject is passed.

When that part of the resolution was adopted they separated that portion of it dealing with the silver question. The first issue that arose was whether we should treat silver as a commodity the same as they were trying to treat wheat and cotton, or whether it should be treated from the monetary standpoint as money. The decision of that would cause it to be referred either to the Economic Commission or to the Monetary Commission. After a very full discussion of the subject, they decided to discuss it from the monetary standpoint and it was referred to the Monetary Commission, and there the questions were considered and determined.

The silver resolution that was adopted by the sixty-six governments was substantially this: They all agreed on behalf of their governments as far as they could bind their governments that they would no longer permit the debasement of silver coin, but would return to at least .800 fine silver coins as budgetary conditions permitted, that they would replace low valued paper currency with silver coin, and that they would not permit legislation that could depreciate the value of silver on the market of the world. I think that is a substantial advance for sixty-six governments to unanimously agree to. As we know, the cause of the depreciation in the value of silver money is due entirely to prejudicial action of governments in the past, and when they agree to stop that then you know that sooner or later the law of supply and demand will govern. I will get to that question a little later.

I may say just in passing that the government of France is now replacing its low valued paper currency, its five and ten franc notes, little disagreeable shin-plasters, with silver coins, and is carrying that out now.

In addition to that, the resolution that we took over to London provided that there should be every effort made to bring about an understanding or agreement between those countries producing large quantities of silver and those

countries holding or using large quantities of silver. In fact, that was a condition of the adoption of the main resolution.

The reason of that was plain. It was first the debasement of the silver coins of Great Britain, France, Belgium, and other countries, and the consequent dumping of the surplus silver derived from such debasement upon the market of the world that started the downward price of silver. But they said, "Why should we desist from this practice if India, who holds probably a billion ounces of silver in the form of silver rupees is going on arbitrarily without restriction and possibly without reason to melt up those silver coins and dump them on the market of the world in any quantities at any time at any price? Therefore, we want you to obtain that agreement."

Two days before that conference adjourned we obtained the agreement, signed up. That agreement provided that the government of China would not sell any silver derived from the debasement of melting up of silver coins, that the government of Spain would not sell to exceed five million ounces a year for a period of four years commencing January 1, 1934, at the end of four years they would go under the general resolution of never again debasing or melting up silver coins. The government of India agreed to limit their sales of silver to 35 million ounces of silver annually commencing on the first of January, 1934, for a period of four years, and after that they would go under the general resolution and would sell no more silver derived from the debasement of melting up of silver coins.

There was a limitation, there was a certainty that people could count on, but on the other hand the producing governments of the United States, Canada, Mexico, Peru and Australia, are the governments to offset this limited over-supply by taking from their own mines 35 million ounces of silver a year for four years during the same period of time. That neutralized the limited over-supply.

In that understanding there was also a separate arrangement between the United States, Canada, Mexico, Peru and Australia as to the amount each of these governments should take off of the market. The United States was required to bear the large part of the burden of that for several reasons. In the first reason, the addition of 30 millions of currency a year to the currency of the United States is a negligible thing; the addition of thirty millions of currency in Canada might be disturbing in its effect upon their monetary system. Again, taking into consideration our wealth, the amount of circulating currency that we have, the relation of our silver currency to our gold currency, justified the demand that we take the particular burden of it.

Not only that, but those governments were aware of the fact that two sessions ago I introduced a bill in the Congress of

* U. S. Senator from Nevada.

† Presented to the annual meeting of the American Mining Congress.

the United States requiring our government to purchase at least 24 million ounces of silver a year for a period of four years. That was all of the silver we produced last year and that was intended to purchase all that silver, and to pay for it either with standard silver dollars into which this silver would be coined or silver certificates as they saw fit. So we were required to purchase of the 35 millions, 24 millions.

The Banking and Currency Committee of the United States Senate, the majority have approved already unofficially, the purchase of 24 million ounces of silver a year for four years. I did not urge a report on that because I desired to wait until after the Economic Conference had acted.

The President has full authority to carry out that understanding. India already had carried it out. The Indian Council passed an order, which is a law in India, prohibiting the sale of over 35 million ounces of silver a year commencing on the first of January, 1934, for a period of four years. They have acted. Now it is up to us to act. We have the authority to act. The President has the authority to act.

In the so-called Thomas Amendment, it was provided that the President of the United States might fix the ratio between gold and silver and that he might coin silver at that ratio. It was also provided in that same Act that if an agreement was reached at the World Conference, which Congress authorized the President to participate in, he should carry out that agreement. Now, he has this power. If he doesn't see fit to exert it then Congress undoubtedly will exert it, because it is a moral obligation imposed upon us because our Government with the authority of Congress initiated this understanding. I think that you will find that it will be carried out either by the President or by Congress.

It may be carried out in many ways, either by opening the mint to the coinage of American silver, which would take off at least 24 million ounces a year, deducting a certain portion of the bullion so deposited as seigniorage and as cost to the government, or through direct purchase by Act of Congress. That is the situation with regard to silver as it stands today.

Now let me briefly go to the more important phase of it for a few minutes. It is contended constantly by economists of reputation that the price of silver does not in any way, or not materially, affect our export trade, that China, for instance, does not buy from us with silver, but she buys from us with her exports.

In theory that is true. You take two well developed countries such as Germany and France and the balance of trade would probably limit exports and imports. It was not true in the United States in the early days when we had this vast territory back of us with raw resources; we had no money to start with her, it all came in from somewhere else. We finally melted up the gold and silver and made it into our own money. A prospector would go out in the hills with a slab of bacon and some beans and a burro and he would find a mine, a gold mine or a silver mine, or a copper mine or a coal mine, or what-not; he would sell that to a British syndicate for something, \$50,000, \$100,000, or a

million. That man had this money with which to buy anywhere in the world. He didn't get it from exports; that money didn't come in from exports. You have got to get down not only to the invisible income such as everyone recognizes, money sent back to China by the Chinese here, back to Italy by the Italians here, the tourist trade, and those things.

But added to that is another factor which always exists in the development of a pioneer country, and that is the creation of a new wealth by discovery and by making it available for the world. That is the position of China today, a country as large as the United States and nearly all of Mexico combined, with nothing but the fringe of it developed in great cities, that vast country waiting for development, four hundred millions of energetic people wanting to have their standard raised, and in the last few years they have made remarkable strides toward it.

When I was over in China in 1925 there had been little change; when I was over there in 1931 I saw the girls on the street wearing American clothes, with their hair bobbed and wearing American hats and American shoes. Our trade commenced to do well with China, and so did Great Britain's trade.

But what happened? They may have some other explanation for it, but we have lost since the fall of silver started in 1928, 75 percent of our manufactured exports to China. Oh, but they will say we lost it elsewhere. We did, but elsewhere there was poverty and distress such as we have experienced in three years, but during that time in China there was a boom going on every minute and is today. Why? Because China has become industrialized. When the exchange value of the Chinese money was so low that it took from four to five of their dollars to exchange for one of ours, with which to buy our goods, they ceased to buy anything except what they had to have. And what they are buying is raw material.

I don't want to take your time with figures, but let's see what happened to Great Britain in that period of time. In 1928 Great Britain exported to China \$153,399,100 square yards of cotton piece goods. In 1929 it dropped to 149,000,000, in 1930 it dropped to 41,000,000, in 1931 to 41,000,000 and just a little less.

Now, what happened to us? Take our exports of raw cotton to England. In 1928 it was about 1,997,000 bales. In 1931 it was 899,000 bales, less than half. Why? Because Great Britain is our great market for raw cotton and China was one of her great markets, and India, too, for her cotton piece goods. She not only lost her cotton piece goods market to China but she lost it to India and Mexico and South America and everywhere else in tropical countries where they use it. And why? Why, the economists will say that we lost it everywhere, but that isn't a fact. China was prosperous.

Take the report of that great Commission that was sent over from London to China in 1930 and 1931 under Sir Ernest Thompson, called the Economic and Monetary Commissions of the Far East. What did they report? They reported these facts and they gave us the cause of it, that the low price of silver had lowered the exchange value of

the Chinese money with the pound sterling to such an extent that the Chinese couldn't afford to buy British piece goods. They couldn't buy it from Japan, and what did Japan do? Japan did what the British did; they went into China with their gold, they exchanged it for the cheap silver money on a ratio of four or five to one, bought factories, enlarged factories, built new factories, and put the Chinese to work making cotton piece goods. That market is gone forever, and it is going every day of the world.

Take for instance, our own exports to that country, and it is quite interesting. Here is what happens: Apparently we were all right. In 1929 we exported to China of raw products forty million dollars worth, in 1930 thirty-eight million dollars worth, in 1931 fifty-five million dollars worth, an increase of 38 percent. That is raw products, that is cotton.

But what happened to the manufactured stuff? In 1929, \$2,531,000; in 1930, \$1,898,000, but those figures are added to that, that is higher; in 1931, \$1,119,667. In other words our exports dropped from the index figure of 100 in 1929 to 43 in 1931. Those are the last exact figures I have.

Now, what happened to silver during that period of time? Silver was around 60 cents an ounce when this thing started, and it moved on down in 1931 to 25.5 cents an ounce. The figures are so simple, so plain, as to what is happening to us. The reports of this great commission from Great Britain which was under the auspices of the Cabinet member in charge of the Board of Trade, show it. In their reports they put their finger on it and they state that it is the duty of Great Britain to take the initiative in removing the obstacles to the natural rise in the price of silver. That is Great Britain. Great Britain doesn't produce any silver except possibly in Canada and Australia a little bit. They were not interested in the price of silver except as it affected the commerce of the world. Why, everyone now is getting so they understand the effect of depreciated currency on exports and imports; everyone knows now who knows anything about exports and imports that the government with its depreciated money has an advantage in export trade and a disadvantage in import trade. They understand that with regard to the currencies of countries that were formerly on the gold standard, but for some mysterious reason they can't understand that the same law applies to countries who have nothing but silver money. It doesn't make any difference what kind of money it is, as a matter of fact today in the world there is no kind of money, there is no gold standard; they might call it a gold standard in France and Switzerland or Holland or Italy, but it is a managed gold standard and so tied in and held in that it is just a little local secret among themselves; there is no such thing among the great nations of the world as a gold standard, except in this: It is the intention of Great Britain and it is the intention of every one of those 66 governments to go back to the use of gold as the measure of the value of currency in international trade and as a limitation of issue, and if it wasn't for that gold wouldn't be worth much more than iron is today. They are

bidding for gold because they know that gold is scarce and they believe that some way, somehow, some time it will be re-established as the measure of the value of the currencies of the world, and I believe it will too.

Now, getting down to bimetalism, there are two different definitions of bimetalism. We have bimetalism in the United States today, but it is not the same kind of bimetalism as Holland has, it is not the same kind of bimetalism that we had in the beginning of this government, it is not the same kind that we had down to 1873. Originally our bimetalism meant that our measure of the dollar was 23.2 grains of gold: it was a little more than that on the start but it is that now, and that the other measure of the dollar was 371.25 grains of silver—two measures, and that you could pay your debts in either measure until 1873, of course, when we adopted the single gold standard measure.

But that hasn't made any particular difference to us here except to this extent: right today, 12 percent of the currency of this country is silver, and that silver is running on a parity with all gold currencies and has run on a parity with all gold currencies through this century, and it has run on the parity of 16 to 1. I know if you use that term 16 to 1 somebody will immediately think you are crazy, but the reason it is 16 to 1 is that 371.25 is about 16 times 23.2. In other words, it takes 16 times as many grains of silver to measure a dollar as it does gold.

Why was that done? That is not just an arbitrary thing that happened. Napoleon, way back in the early days of 1818, established the ratio at 15 to 1, after he had had the greatest statisticians and scholars of that age determine the preciousness of gold and silver, and they determined that the production of the two was as 15 to 1 and that the demand being exactly the same for money, the ratio of exchange should be 15 to 1.

Great Britain wanted to go them one better so they said, "We don't think it is quite that good, we will call it 15.5 to 1," and then of course they traded in it, they bought silver in Great Britain, carried it across the straits and coined it in France at a half a cent an ounce profit. That caused gold to flow into Great Britain, silver back into France, and then Great Britain having nothing but gold declared the single gold standard in 1818 and made the first discrimination against the use of silver as money. From time to time they have discriminated against its use for money.

Then they say that the law of supply and demand is working. Why, take away from gold the possibility of ever again being used as money, and I doubt if it will be as valuable as tin. What do you want with it if you don't use it for money? Half of it is used for jewelry and the arts and sciences. What would become of the other half if you didn't need it for money? Give exactly the same demand for silver for use as money as you do to gold and the law of supply and demand would undoubtedly run right along.

Today we have nearly \$800,000,000 in silver in circulation in this country, 12 percent of all of our currency. Every one of those dollars today is circulating and paying debts at \$1.29 an ounce. No-

body ever questioned it. Our Government since 1873 has made about \$265,000,000 in profit buying the silver from the miner and selling it to the banker and the grocer and the merchant to do business with. There hasn't been any strain on our credit. In 1900, 30 percent of all the circulating currency of the United States was silver. We could increase the silver circulation in this country \$1,500,000,000 and then we would not reach the proportion of silver currency to gold currency of 1900.

Why should there be any great fear of inflation even if we coin the annual production of this country of 24,000,000 ounces a year at a value of \$1.29 an ounce? It wouldn't add but a little over thirty millions a year to our currency of this country, and they could keep adding to it until they had added \$1,500,000,000 before it would be as was the proportion of 1900. What is all this talk about being afraid that you will disturb the ratio and bearing of the currencies of the United States by any of these small acts? It is perfectly absurd.

Why is it that people want gold? It is not a serviceable metal, practically. There are not enough teeth to be filled to use a fifth of it. They want it for the same reason they have wanted it throughout the ages, because it is precious metal that is recognized as precious throughout the world from the time of barter and trade when they wanted to reach further out and have a substitute for transferring a cow for a horse, they found out that a chunk of metal about as big as this match case was scarce, and that if they took that chunk of metal for the cow, this man somewhere else would take that chunk of metal for a horse. It was the scarcity of it. The functions of money are to transport things, like a railroad; not only that, but to measure excess labor for the future, to hold it to hand down to your children and to posterity, to meet the hard times of poverty. But not only that, it must be so limited in its production that it will be a sound measure of money. It must be found everywhere, not like platinum, in a few places.

So we find that from the beginning of time peoples everywhere have recognized that there were two precious metals, gold and silver, that nature limited their production, and that natural limitations gave it its value as money and made it stable. They not only found that out in the course of time, but even before professors and statisticians existed and roved the country, they themselves found out that there was just about 15 or 16 or 14 times as much silver as gold. They established the ratio themselves in their trades with silver before it had the stamp of a weight on it, or a government.

The same thing that causes people, our most intelligent, educated people, our great bankers, for instance, to long to get the gold into their hands, is because they don't trust anything else.

Well, I don't blame them much. No one who can see what is happening to the great powerful governments of Europe and their paper money, which has no intrinsic value, no value whatever outside of their own country, can help but fear what we call fiat paper money.

I have read the stories of Barney Baruch in the papers about the terrible

destruction of fiat money. I thoroughly agree with him. He doesn't have to paint the history of Europe, the mark, we all know it. That is the reason Barney wants gold, and if he couldn't get gold he would want silver, just as the Chinese want silver and the Indian wants silver. The Indian there has his wife covered with bracelets, anklets, breast-plates of silver, because the Indian woman can't inherit but she can keep that and when poverty comes, when the drought comes, she cuts off a little piece of that silver and takes it in to the bazaar and buys food and clothing with it.

During the good times they have hoarded. There are probably eight billions of ounces of silver hoarded in India. Nothing on earth could drag it out of India save necessity, poverty, famine, distress.

When silver was \$1.38 an ounce, the highest in the history of the world, in 1919, I think it was, the Chinese were buying more silver than they ever bought before. The more valuable it becomes, the more they want it.

When there is a bear movement on silver like India created, the Chinese speculators know that it is going down and they join in the selling movement and buy gold and hoard gold, and they have been hoarding gold in India and China to an estimated amount of probably a billion dollars.

But as silver starts up their gold comes out to buy silver and they buy silver. I wouldn't be afraid now to open the mints of the United States to the coinage of the silver of the world, because my studies of it have convinced me that you couldn't get over 250,000,000 to 300,000,000 ounces in here for coinage. As a matter of fact, when there is a tendency to draw silver to this country, China puts her embargo upon the exportation of silver because she doesn't intend to have her country denuded of silver. So with England.

All we have got to do is just simply to remove the Government restrictions and limitations that have been put on silver money. A rise in the price of silver doesn't make China buy from us. Some economist the other day said that in the first eight months of this year our exports fell off 16 percent to China, and during that time the silver was 4 cents higher than it was in 1932. It takes a little period like that. But he forgets that the price of cotton went up from 5½ cents to 9 cents during that period of time and the rise in the price of silver was not near as high as the rise in the cost of cotton and wheat and other things. That is your statistician. He picks out a little speck, a little section and says: "Look at that," instead of taking an average of three or four years.

The price of silver dropped from 65 to 25.5. Measure your trade, your exports, as did Great Britain, and you will find out what has happened.

What I mean is this: Some of you members of the Mining Congress are engaged in coal mining, others in iron mining, others in silver mining, lead, gold, copper, zinc, what-not, and therefore I am discussing the economics of this proposition.

Your automobile sales went to pieces in China. We sold 80 percent of all the automobiles sold in China, and yet Mr.

Soong, the Minister of Finance, who was educated in this country and is a great banker, testified before the Economic Commission over in London: "Of course we can't afford to buy your trucks and your automobiles, because a little truck that we paid \$1,200 for in our money three years ago we now pay \$3,400 for in our money." They said, "But wouldn't China benefit by cheap silver? Isn't it industrializing China?"

He said, "Yes, it is industrializing the coast cities, but my ambition is to develop China, the great resources back of it, and I can't do it without credit, I can't keep my credit unless I can pay the service debt on the \$500,000,000 of gold that we owe. When we borrowed that gold 1,000,000,000 Chinese dollars would pay it; today it takes 2,500,000,000 Chinese dollars to pay it. We can collect \$4 on the hundred taxes in our silver dollars, but when we get to pay on the debt it is only \$1. No government can live in China without credit, and no government in China can get credit until it can pay its foreign service debts, and they can't pay the foreign service debts when you value our money at one-fourth or one-fifth of your money."

There is your history. If only you who are interested in metals would carry the truth to the country, would answer the foolish articles that are written in the papers like that written by Mr. Robey here the other day, it would help. He said, "Why, there are only four or five states interested in silver, there are only probably 100,000 people directly interested in silver. The gross value of it last year was only about, I should say, \$8,000,000. Why should we worry ourselves about that little crop?"

Well, we shouldn't if that was all there was to it, but it has never occurred to him ever to read the reports of these other countries on these various questions that stand undisputed. Why, our commerce today, and ever since silver went up above 40, our exports to China, have been increasing right along. Why doesn't he segregate that period? Of course, that difference of 4 cents an ounce between 1932 and the eight months in 1933 when we had raised the cost of everything, was not a fair comparison.

They say, "If the Chinaman's bank account was doubled he wouldn't buy any more." Well, it is human nature that if you double a man's bank account he is going to buy just a little more. If you double my bank account I would probably buy a new automobile instead of running the one that I have been running for five or six years. You give the Chinese dollar the purchasing power even that it had in 1926, 1927, and 1928, and for years, of 60 to 65 cents an ounce, and you would pretty nearly double his purchasing power in the United States, and allow him to pay interest on his national debt, you would allow him to borrow more money, you would allow him to carry out the program that that national government promised, and that was to build railroads and wagon roads and canals.

The only reason they couldn't carry it out and the only reason the national government of China was under fire was because they couldn't carry out the promise and they couldn't carry out the promise because they had to buy these

things outside of their country where their currency was depreciated.

Now we are depreciating the dollar deliberately, there is no use talking about that, and for exactly the same reason that Great Britain depreciated the pound and France depreciated the franc, because a country with a depreciated currency compared with other currencies has the best of the export trade. France got it first and prospered all during the hard times, Great Britain when she depreciated the pound got it, and now we are getting it. That is all there is to it. But if we recognize that law with regard to export, why if we appreciate the currency of another country instead of depreciating ours, aren't we accomplishing the same thing? We are, and by appreciating or reestablishing the value of silver money throughout the world by comparison with our own currency, it has the same effect as the law of appreciation and depreciation, and over half the people of the world will have their purchasing power in our country, not at home but in our country, doubled, and they will buy from us. There isn't any question about that at all, and it is coming.

The question is, people are afraid to start to coining the silver of the world in the United States, and there is a basis for fear. While I may believe that only 250,000,000 to 300,000,000 ounces will come in here, others may say, "Why not 12,000,000,000 ounces? That exists in the world, why not have it come in?"

There is no proof it won't. It was that argument that did more to destroy the Bryan movement than any other argument that was ever offered. The cheap money argument had not half to do with it as did the flood of silver into our country and the driving out of gold. It is for that reason that I feel that the logical, natural, easy step to take which will get support will first be to try it out by limiting the coinage to our silver that is produced in this country. We know how much that is. There never has been over 62,000,000 ounces. It certainly can't be that much more for a long time, because 80 percent of the silver that is produced in this country is a by-product of the mining of copper, lead and zinc, and until there is a demand for copper, lead and zinc, until prosperity returns, then the production of silver can not increase. It is a governor, it is a safety valve, there can be no such thing as the over-production of silver. Why, when silver was over \$1 an ounce for three years and all of the mining companies sent their scouts and engineers and geologists out and took the old pillars out of mines and worked the old dumps over all throughout the world, the total increase over the prior period was only 25 percent, and a part of that was involved in the natural increase of about 3 percent per annum.

I say to you that the fear of all of this is based upon the wilful ignorance of economists and statisticians and writers in going to the basic facts of production and consumption of these metals. They are not interested. They still preach that there is a great stream of silver flowing somewhere that may be poured in here and drive out the gold. Well, there isn't any danger of driving out the gold right at present, and in my opinion there never will be. If you

should give the value to the silver of the world that we give to our \$800,000,000 in this country, you would have a basic purchasing power of silver of \$15,000,000,000 throughout the world instead of \$5,000,000,000.

There isn't enough gold to reestablish the old gold standard, and every government knows it; there never will be enough gold to reestablish the old gold standard. There may be enough if it is in a closed circuit in central banks used solely for the purpose of the settlement of the balance of trade between countries, but if you are going to have sound local currency you have got to have it based on metal, and there won't be enough gold to base it both ways and the logical, the sound, the safe way to do it is to base it on the other precious metal as a supplement to gold. Then you will have no fear of the issue of fiat money in this country or anywhere else throughout the world.

Steel—Benefactor, Not Godfather

(Continued from page 10)

10. U. S. Steel Corporation employees insured—same as above.

11. Date U. S. Steel Corporation inaugurated employee stock ownership—Twenty-fifth Anniversary book issued by Steel Corporation.

12. Number of present subscribers to stock among employees of U. S. Steel Corporation—Annual Report of Corporation, 1932.

13. Bethlehem employee garden figures—article in *Steel* October 10, 1932, and December 22, 1932.

14. Total investment figure for the industry—advertisement by Halsey Stuart & Co., entitled "Framework of Modern Civilization."

15. Number of stockholders in steel industry—Standard Statistics figure obtained from Barringer of *Steel*.

16. Number of stockholders, U. S. Steel Corporation—Annual Report of Corporation for 1932.

17. Figures quoted from National City Bank—National City Bank Bulletin, September, 1933.

18. Estimate that profits materialize at 40 percent operating capacity and 80 percent necessary to reach 6 percent—check of operations against return made by Bowerfind and Knowlton.

A THREE-REEL motion picture available in 35 MM. and 16 MM. sizes showing America's first 100 percent mechanized coal mine, the Wildwood mine of the Butler Consolidated Coal Company, may be obtained from R. A. Wood, supervising engineer, Graphic Section, Bureau of Mines, Pittsburgh, Pa. This bituminous mine electrified by Westinghouse is located 15 miles north of Pittsburgh in the Freeport seam. The trend of this film story carries the coal from working face to shipment, with machinery and safety playing the leading roles, side by side in production, in auxiliaries and in shop equipment. An especially prepared underground "stage" and as much as 84,000 watts of incandescent lamps made it possible to put much emphasis on the unusual features of the Wildwood system at the face.

The Taxpayers' Viewpoint

by George M. Morris*

THIS paper might well be called "the worm's eye view of Federal taxation." That appears to be an appropriate figure for two reasons. In the first place, taxpayers in these days will recognize a certain kinship to the worm even though they may be contemplating a turn. In the second place, a lawyer, such as the present speaker, who is engaged actively in presenting the cases of his clients may very well be so close to the picture that he lacks perspective in looking at it. He may do a little more squirming than the other worm but, after all, he is just another worm, and may be relied upon to report but little more than a worm can see in his contacts with the corners and points of the tax administration structure.

Most persons who speak for the taxpayers are concerned primarily with the statutes. Candor would compel the confession that the present speaker is bursting with wonderful ideas on the substantive side of the tax law: most people who don't know anything about it are. On the other hand, any qualifications I may have to be heard at all go to observations on the way the statutes work after the statesmen enact them. Therefore, these remarks will be addressed to some simple aspects which every taxpayer who has ever had a "tax case" has some ideas about—values that will, however, remain long after many statutes have been forgotten.

While the tax-gatherer has seldom, if ever, been a popular official, many a rather unhappy statute has been made workable by the intelligence displayed in applying it. In the administration of the Federal taxing statutes, experienced taxpayers have expressed strong desires for certain principles. One of these is the demand for prompt decisions. Many are the situations, of course, where the taxpayer, faced with the certainty of an ultimate levy wants delay in order that he may get ready for payment. In the main, however, the taxpayer wants to know as promptly as possible definitely what his liability is in order that he may provide for it. Also we are all aware that the expenses of government increase with the delay in the collection of revenues. The less the delay, the less is the expense; the less the expense, the lighter the burden on the taxpayer.

The wise taxpayer realizes that usually his contest of a proposed tax is chiefly a salvaging operation. Such contests create no new wealth; they are not profit-making enterprises. They normally relate to yesterday's costs, not tomorrow's. As a consequence, the more quickly tax issues are determined, the more satisfactorily energies may be de-

voted to new business and the creations of new revenues for the Government. It will hardly do to say that it is almost as important to be quick about a decision as it is to be right, nevertheless celerity is obviously a virtue in tax administration.

Another warrant for promptness in decision is an aspect of tax administration which is not always realized. We need to be reminded that the Government never really loses a tax dispute. If the tax is not collected from taxpayer A, that tax, or some other tax necessary to operate the Government, is going to be collected from taxpayer B or C. In addition to that, if taxpayer A does not legally owe the tax claimed

ability the affording to the taxpayer a face to face interview with the final arbiter of that taxpayer's case.

One of the reasons for the satisfaction with the administration of the income tax in Great Britain and the relatively low cost of that administration has been the high ratio of administrative conclusions of tax disputes to the litigated conclusions of these disputes. In the past, at least, our higher administrative officers have never given their staffs anything like the degree of authority for the settlement of taxpayer's protests which is possessed by the minor personnel of the British Inland Revenue Office. Possibly the new technical staff of the Bureau of Internal Revenue will have powers in this direction which have not heretofore been delegated. Be that as it may, however, there are but few who have regularly observed the administration of our Federal taxing law who have not felt that the will to settle cases, rather than litigate them, could be much greater developed to the advantage of all concerned. It is suspected that in this quarter our administrative officers have their broadest opportunities for accomplishment.

Ours has been said to be "a government of laws and not of men." Regardless of validity of the suspicion that we may be hedging on that principle just at present, certain it is that our tax laws are, and must be, administered by men.

What then is the view of the taxpayer with respect to the men who daily apply the laws?

The assertion is ventured that what the taxpayer wants, above everything, is men of intelligence—men of courage: ability, sympathy, understanding of conditions, experience, yes, of course, but primarily intelligence and courage.

The more intelligent the administrator the more firm is his grasp of the law—the quicker his grasp of any particular set of facts. It is axiomatic among those who are in regular contact with men who put the laws into effect that the more able men they are the surer, and the sooner, all parties concerned will be of getting the right answer. The more intelligent a man is, the more certain he is to discover his own error; the more intelligent he is, the more he may be relied upon to stand by his point when he is right. One of these attitudes is just as important to the taxpayer as the other. This is because, in a sense, the interest of all other taxpayers is opposed to the interest of any particular taxpayer. Unless the man applying the law to the individual's case is equally as intelligent, as active, and as just, with all the other taxpayers, the more tax, in the long run, that individual taxpayer will have to pay.

The second quality the enlightened taxpayer demands of the administrator is courage. The most pervasive incubus of almost any Government organization is "passing the buck." It takes courage to make decisions. Judgments in con-

(Continued on page 54)

CROWS ON A DEAD LIMB



—Washington Times

against him, the protection of his rights afforded by the decision that the asserted tax is not due, is one of the best functions that the governmental agent may perform for the citizen. If the Government cannot lose in these decisions there is less reason, from the Government's interest, for delaying them.

One of the difficulties in applying a law to the many taxpayers within the jurisdiction of our Federal Government is the number of persons before whom any controverted matter must pass before final decision. Frequently, one of the most irritating consequences of this situation in tax administration, is the decision of cases by persons before whom the taxpayers and their counsel have had no adequate opportunity to appear. With due allowance for procedures which are largely a result of necessity, administrative officers and officials, nevertheless, should be constantly reminded that dissatisfactions with adverse decisions are almost invariably increased in the taxpayer who has not enjoyed the opportunity of actually presenting his case in person to the ultimate decider. A successful administrator will push to the limits of fea-

* Chairman, Committee on Federal Taxation, American Bar Association, presented to Thirtieth Annual Convention of the American Mining Congress.

American Mining Congress holds ANNUAL MEETING



HOWARD I. YOUNG

*President of The American Mining Congress.
Mr. Young is President of The American
Zinc, Lead and Smelting Company.*

THE 36th Annual Convention of The American Mining Congress was held at the Mayflower Hotel, December 13-16, 1933, Mr. J. B. War-riner, President, opening the sessions with a talk on Mining and National Affairs.

The program was an outstanding one, with leaders in government, and industry presenting topics of great importance to the mining industry. These included The NRA and Mining; Legislation and the new Congress; Silver in the World Markets; the necessity for Protective Tariffs; the 30-Hour Week; Many phases of the present tax question and new revenue; the Iron and Steel industry as a Real Industrial factor; What the Bureau of Mines Should do for Mining; and general discussion on ways and means of meeting the situations presented at this time.

Howard I. Young, president, American Zinc, Lead and Smelting Company, was elected to the presidency for the year 1934. Members of the board elected are as follows:

D. D. Moffat, vice president, Utah Copper Company, Kearns Building, Salt Lake City, Utah.

J. B. Putnam, Pickands Mather & Co., Cleveland, Ohio.

D. A. Callahan, president, Callahan Zinc-Lead Company, Wallace, Idaho.

W. J. Jenkins, president, Consolidated Coal Company of St. Louis, St. Louis, Mo.

Robt. E. Tally, vice president, United Verde Copper Co., Clarksdale, Ariz.

Paul Weir, vice president, Bell & Zoller Coal and Mining Co., Chicago, Ill.

Donald Gillies, president, Corrigan McKinney Steel Company, Cleveland, Ohio.

Clinton H. Crane, president, St. Joseph Lead Co., New York City.

A. B. Jessup, vice president, Jeddo-Highland Coal Co., Jeddo, Pa.

A. E. Bendelari, president, The Eagle-Picher Lead Co., Cincinnati, Ohio.

C. J. Ramsburg, vice president, The Koppers Co., Pittsburgh, Pa.

Charles H. Segerstrom, president, Nevada-Massachusetts Co., Sonora, Calif.

President, Mr. Howard I. Young.

Vice Presidents: Mr. D. D. Moffat, Mr. J. B. Putnam, Mr. D. A. Callahan.

Executive Committee: Mr. Howard I. Young (ex officio), Mr. J. B. Putnam, Mr. W. J. Jenkins.

A strong note of confidence in the general situation marked the program of the convention. That revolutionary changes are being made and will continue to be made was freely expressed but there was the feeling on the part of the speakers that these changes have been long needed and will have great beneficial effects. Particularly comforting was the frank extemporaneous talk given by Speaker Henry T. Rainey of the House of Representatives. Concerning the huge expenditures involved in the recovery measures, he said: "I wonder why we worry about the cost of these things and about an addition of two or three billions of dollars to our extraordinary budget. We have a national income of \$70,000,000,000 a year and it may be destroyed unless we get out of this depression, and if we mortgage that national income for \$3,000,000,000 more and spread it over a term of years, it doesn't look so formidable nor so dangerous."

Speaker Rainey finds nothing in the disturbances around the country to be alarmed about. He took the view that much of it corresponds to the small township elections in which there is the "darnest fight" over no issues at all. He feels that there is no basis for the stories in the press predicting an "uproarious" session at the next Congress and the passage of "dangerous" legislation. "Nothing of that kind is going to happen," he said. "We have taken the initial steps. Bills we have passed have been carefully considered and worked over in committees; we are not going to change them materially. They have commenced to work."

As to the gold purchasing program, Mr. Rainey suggested that "perhaps it hasn't proceeded far enough." The fluctuations in Government bonds, he believes, are due to manipulation and not to the forces that should govern their value. "Whenever we give a little higher price for gold," he said, "I notice that bonds go down, and whenever we stop for a short period the program of increasing prices, bonds go up, but not many bonds change hands. It is the easiest market in the world to manipulate, and in some way these people who are bankers, international bankers especially, seem converted to the idea that gold must be the circulating medium and the only medium and that it always must have its coinage value of \$20.67 an ounce, and that anything else is going to prove disastrous." In this connection, the Speaker said, there would be a Congressional investigation if the fluctuations continue with the continuation of the gold purchasing program and he expressed the belief that surprisingly few bonds would be shown to have changed hands.

Mr. Rainey predicted that the gold standard as we have known it "has gone, never to return" and that when we get back onto gold it is going to be a dual standard into which silver will enter as well as gold. He said he does not know upon what ratio, but thought it would be probably 20 to 1.

President Henry I. Harriman of the United States Chamber of Commerce, speaking on the NRA in industry, told the Congress that in general the good points of NRA have outweighed the bad and that in certain industries such as

textiles it has brought tremendous benefit. Broadly speaking, he said, "the National Industrial Recovery Act is the Magna Charta of industry." It could not be expected, he said, that a great number of codes for the orderly conduct of business could be formulated without many mistakes being made but he felt sure it is General Johnson's intention to correct these mistakes as proof is presented of error. "I look upon the present codes," Mr. Harriman said, "as but the starting point and that experience is going to show to the various code authorities what they should do to make the codes better, both from the standpoint of industry, labor and the consumer."

Mr. Harriman expressed the opinion that with the passage of time it will be shown that the South is entitled to a slightly larger wage differential than it has. He thinks also that due attention has not been paid to the difference in cost of living in a small town and a big city and there are distinct arguments for giving a differential to the industry in the small city.

"Then I think the codes have been unduly oppressive on many small industries," he declared. "There are many small industries employing 5, 10, 15 or 20 men; they are the backbone of our industrial life. I should be most sorry to see them wiped out. Yet we must admit that they have not been able to accumulate the surpluses which the large industry has accumulated and as wages have been raised and hours have been shortened they have not been able to raise their prices simultaneously. They have not the surplus to carry them over, and it has worked a real hardship on them. I believe that condition must be recognized, either by not applying codes to certain very small industries or by definitely recognizing that the application of the code to a small industry should be spread over a number of months and give the industry an opportunity to adjust itself to new conditions."

Mr. Harriman pointed out that the great danger that lies in the codes is in an excess of Government control. He warned against doing away with individual initiative and the opportunity for profit for the man who really makes a material contribution to civilization. In conclusion, he expressed the belief that a year from now many, if not most, of the initial errors of NRA will have been corrected.

Senator M. M. Logan, Chairman of the Committee on Mines and Mining, promised the Congress fair, intelligent and honest consideration of all legislation coming before his committee. He asked that members of the industry keep themselves informed as to the legislation affecting them in Congress and to advise him about it so that he can give intelligent treatment. "If there is a bill pending in Congress that ought to be passed that will be for the benefit of your business," he said, "then you ought to make it a point to see that I as Chairman of the Committee know everything there is to be known about that particular legislation so that I may advise the Committee. It is your duty to submit briefs, to submit arguments, to submit facts that can be used in arriving at a conclusion. I have no patience in the world with a man who only makes asser-

tions. If you come before my committee with an idea that you can assert something is true without being ready to prove it, you will not get very much consideration. . . . But if you come before my committee, however small the matter may be or however great it may be, prepared to submit reasons to support your views, I can assure you that you will always receive consideration."

Senator Logan suggested that "some plan ought to be arrived at which will lead to stability" in the mining business, "which will enable you to understand just what you can do and what you should not do, that your business should be so planned and so coordinated that you may know what to expect." He offered this as a problem for the industry to work out and promised his support in any legislation in that direction.

A plea for clear vision on the part of members of the mining industry was made by President J. B. Warriner of the American Mining Congress in addressing the congress on "The Relation of Mining to National Affairs." Pointing out that confusion over present Government procedures exists generally among business men, Mr. Warriner explained that one of the difficulties causing this confusion is the introduction of "extraneous issues" into the program of national industrial recovery since the days when it was conceived by its originators. "The intent, I believe, is generally admitted to have been an attempt on the part of the Government to allow industries to govern themselves and to eliminate certain entanglements that had prevented them from doing so. In the course of the development of that procedure, certain phases other than things that were conducive to that main purpose were introduced into the Act, quite properly many of them, but the effect of them in actual practical development since that time has been to cause a great deal of the confusion and doubt that exists."

"We all realize the increased problem that has been put upon all of us by the feeling on the part of labor that the Industrial Recovery Act was designed primarily to increase wages and shorten hours, and everything of that kind, that that was its main and principal object rather than the collateral effect that it was hoped would result from the Act."

"I am not attempting in any way to defend the National Industrial Recovery Act; I am not fully in accord with certain features of it myself; I am, however, trying to take a rational viewpoint toward it and also toward those other Governmental experiments which have been the subject of so much criticism of late and which have confused the minds of men charged with great responsibilities that go with business management and industrial affairs."

"I do want to make this plea to those of us who are engaged in the mining industry in particular. We in the mining industry should be clear-visioned. We know that success in mining does not come from slavish following of old methods and old policies and practices when these have ceased to be successful. Experimentation has been almost a keynote in the mining industry, and the adoption after experimentation of new methods and new ideas, and that policy has definitely set the mining industry of this nation up as the model for the world itself to follow."

"In view of that, we can hardly object to experimentation, provided it is carried on sanely and its results are properly judged and properly applied where success has resulted from the experimentation and where the collateral of that is fully observed, and that is, that where failure has resulted, the experiment is not continued through any sense of pride of authorship but is promptly dropped."

Speaking on the accomplishments of NRA, Mr. Warriner cited the bituminous code as an example of an industry in dire straits for over a decade but which in three months' time had worked out a program under which the operators in the various fields can work together. The opinion of most mining men, he said, is that there is a reasonable hope for success of the bituminous code experiment.

"But whether it succeeds or not, the accomplishment to date of uniting the discordant and variant elements in the bituminous industry is a miracle and I stand by that statement regardless of what happens hereafter. That miracle is a monument to the National Industrial Recovery Act that will be a sufficient monument to it provided it accomplishes nothing else.

"I think in view of that record, we in the mining industry should particularly take upon ourselves this precept, that we should withhold adverse judgment and that we should also withhold too much adverse criticism. I think constructive criticism probably would be welcomed by the Administration in the further working out of the procedure under the Act; it certainly should be welcomed, but mere destructive criticism should be avoided, and it is that that I should like to impress upon the mining industry."

Representative Frank Crowther of New York voiced his belief in the protective tariff policy and promised that he would oppose any deviation from that policy. "Under present world conditions and the present administration policies outlined for future action," he said, "it seems almost an act of heresy even to discuss or pretend to be a protectionist in this country at the present time. However, I am one of the old-fashioned school of protectionists who believes that no rate is too high specifically if it really takes care of an American industry that pays decent wages and contributes to American prosperity." Mr. Crowther stated that under NRA tariff is more necessary than ever and he pointed out that Congress recognized this when it included a provision in the bill to give protection against foreign competition when such competition develops as a result of NRA compliance.

Mr. Crowther expressed the opinion that the protective tariff is a definite part of our governmental policy and that it is going to stay.

Prospects of legislative efforts to inaugurate a 30-hour week in industry provided the subject of a lively discussion participated in by J. F. Callbreath, secretary of the Congress; S. L. Mather, vice president of the Cleveland Cliffs Iron Company; Wm. Young Westervelt, president of the Ducktown Chemical and Iron Company, and D. A. Callahan, president of the Callahan Zinc-Lead Company. Mr. Callbreath read a report made to him by the National Industrial

Conference Board which gave statistical data showing that production under a 30-hour week would be insufficient to meet future consumptive demands. Mr. Mather thought it better to have the question of hours per week handled by the codes of the various industries. Legislation uniformly limiting work schedules, he felt, is apt to create many mistakes which would be difficult to correct. He took the position that most industries are working less than 40 hours now and some only 24 hours and that it would be unwise to attempt to cure this situation by legislation. The question of unseasonable occupation has to be recognized, he said, and the fact that the workers themselves have not always been agreeable to staggering of employment.

Mr. Mather cited an analysis by Leonard P. Ayres showing that a little less than half of the present unemployment is caused by the fact that 55 percent of the people are engaged in productive employment and 45 percent in employment having to do with transportation, distribution and services in connection with goods produced. It was shown that if the people who were producing can get employment, the other 45 percent would be taken care of but of the 55 percent in productive employment one-half of the idle were formerly engaged in producing permanent commodities and only 5 percent in such products as foodstuffs, clothing, coal and materials which are used up. "It therefore seems," said Mr. Mather, "that we will have to find more demand for the permanent commodities or else there will have to be a shifting of labor, of people who formerly were employed in manufacture and production of permanent commodities."

Mr. Westervelt said that the cost of a 30-hour week would fall entirely upon industry, judging from the attitude of labor organizations. And industry, he declared, does not seem prepared for a 25 percent further increase in wages. He thought the situation should be left just where it is, "with each industry through its own adjustments and its own needs coming to a reasonable compromise as to what hours it should work as a maximum, and that there should be no legislation on this subject."

Other papers which were presented, and which either appear in full in this issue, or will appear in full in coming issues were "The Position of Silver in the World," by the Honorable Key Pittman, Senator for Nevada; "The Clay Industry and the NRA," by George C. Crossley, president, The American Clay Association; "The Copper Industry of Arizona—Present and Future," by Ross F. Leisk, assistant general manager, United Verde Extension Mining Company; "Iron Benefactor, not Godfather," by Donald B. Gillies, president, Corrigan, McKinney Steel Co. Two full sessions were devoted to discussion of tax problems, the speakers including: James R. Knapp, Union Carbide Corporation; H. B. Fernald, chairman, National Tax Committee, The American Mining Congress; Donald H. McLaughlin, tax attorney; R. C. Allen, Oglebay, Norton & Co.; D. A. Callahan, president, Callahan Zinc-Lead Co.; George M. Morris, chairman, Tax Committee, American Bar Association, and E. C. Alvord, tax attorney. A summary of these discussions appear elsewhere in this issue.

One of the most interesting discussions of the convention was that relating to the Bureau of Mines, and the proposal to transfer it again to the Interior Department, and to still further cut its appropriation. This discussion appears in full in this issue.

The Resolutions Committee presented the following resolutions, which were approved by the members:

Resolution No. 1

Be it Resolved, That the American Mining Congress is unalterably opposed to national legislation which would blanket all industry of the country with a general law relating to maximum hours of labor. Seasonal necessities as well as the peculiar conditions surrounding many industries, of which the mining industry is one, require special consideration. This we believe can be taken care of most effectively through codes of fair competition under the National Industrial Recovery Act. We pledge sincere cooperation with the National Recovery Administration and a most sincere effort to provide facilities for increased employment, but we urge that no congressional action be taken which will handicap industry in its effort to get back to normal conditions.

Resolution No. 2

Resolved, That the American Mining Congress heartily endorses the principle underlying the Federal Securities Act and calls upon the members of the mining industry to cooperate in the elimination of fraud in the floating of securities in the financing of the industry; and be it further

Resolved, That we call upon the Congress of the United States to seriously consider such amendment of said act as will make it possible to issue honest securities of the financing of capital outlays and the refinancing of existing companies to carry on capital operations. The very stringent provisions of the act relating to civil and criminal responsibility on the part of directors and officers should be rewritten to provide for full protection to purchasers with assurance that good faith and due diligence on the part of directors and officers may provide protection against unscrupulous attack in the courts. Only through this, in our opinion, can normal financing be accomplished and stockholders and employees of the industry be assured of stable conditions in the future.

Resolution No. 3

The mining industry of the United States occupies a position second to that of agriculture. Its annual contribution to the wealth of the nation approximates \$6,000,000,000. Fifty percent of the freight tonnage and 75 percent of the gross freight revenue of the railroads is received from the nation's mineral industry. The successful conduct of the mining industry is vitally necessary to the success of all business, manufacturing in particular.

The United States Bureau of Mines was created at the urgent request of the mining industry of the nation. The American Mining Congress, now in session in the city of Washington, made up of every branch of the mining industry,

(Continued on page 20)

LEGISLATION



OPINIONS differ widely as to how little or how much Congress will do upon its convening January 3. Rumbblings have been growing distinctly louder as political toes have come into contact with the program of the Administration. It is the general feeling, however, that the President will control, and that many of the proposals being advanced will not reach the floor. It is no secret that the Administration wants no highly debatable matters to come up at this session; that it wants the session to be brief; and that danger to the recovery program may result from too long a stay by Congress. The Administration does not anticipate strong opposition to its proposals, and everything seems now, to point to a relatively early adjournment.

Those things likely to cause the greatest discussion and opposition are (1) the Administration's gold policy, (2) the effort to remonetize silver. A very strong block are active in the demand that silver be given a place in the monetary system, and will fight for their position; (3) the efforts of the special committee of the Ways and Means Committee of the House to "plug loopholes" in matters of taxation. The committee has recommended drastic changes which will be of serious import to the mining industry, and the Treasury Department is strongly behind changes that are far-reaching in effect. The Committee has studied the tax situation for six months, and is in a humor to pass the revised bill quickly. It seems apparent now that the proposals will meet with considerable objection in the Senate. (4) Senator Wagner of New York, and but recently resigned as Chairman of the National Labor Board, will urge stronger legislation for the enforcement of Section 7-a of the Recovery Act. He also will ask for a clarification of Collective Bargaining, and the outlawing of the company-union. He will urge the passage of a bill for unemployment insurance. The Department of Labor has already announced, through Secretary Perkins, its ten-point program for legislation to assist the working man. These include the 30-hour week, with permanent limitation of hours to work; standard minimum wages; provision for old age pensions; unemployment reserves; workmen's compensation, and stronger and more binding laws for labor's benefit. The 30-hour week unquestionably will be pushed in the coming session. This legislation is being sponsored by

Senator Black of Alabama and Congressman Connery of Massachusetts, and will have considerable backing. It is anticipated that there will be further proposed legislation in relation to bituminous coal, looking to zoning, or allocation. This is caused by the feeling of the South-of-the-river producers that the wage-scales established by the Recovery Act have made impossible the sale of coal in the mid-west markets. It is now anticipated that such legislation can be passed at the present session.

The mining industry will be particularly interested in the proposals to transfer to administrative channels the authority heretofore exercised by Congress in passing upon tariff issues. Some little time ago a special economic commission heading up in the Department of State and composed largely of cabinet members undertook a study of foreign trade conditions with a view to making reciprocal trade agreements between the several nations. Fear is expressed that tariffs made in this way might lead to very great advantage to some industries and to the sacrifice of others. In a nation with such varied interests as the United States this policy might lead to very grave injustice without opportunity for the lines of enterprise most materially affected to be properly heard. Heretofore Congress has been very loath to delegate this authority, which carries with it the possible life or death of some important industries.

So far 181 codes have been submitted to the President for approval. General Hugh S. Johnson in his review of progress toward the goal asserts that the Blue Eagle has been successfully established, and that its wings are stronger, by far, than they were a few months ago. Senator William E. Borah, of Idaho, has been actively protesting against the Administration's policy under NRA. He, together with Senator Nye were invited to become members of a board to "guard the interests of the small business man" under NRA Codes. Both senators have declined, asserting that authority must come from Congress.

A ruling of far reaching importance

is that which involves the transfer of all labor disputes arising in the coal fields, to the Divisional Labor Boards. Heretofore all such disputes were handled by the National Labor Board.

There will be special efforts made concerning the Securities Act. There are too groups involved: Those drastically opposed to the general purposes of the act, who will seek its abolishment; and those who believe that the act is a step in the right direction. Some believe that the act should be made even more binding. A still larger number regard the responsibilities which the present act entails upon directors of large enterprises as a real danger. It is contended that this provision will prevent the carrying out of very many worthwhile enterprises.

The Federal Trade Commission has adopted three additional rules under the act. One is a definition of "commission" or other remuneration; another is a definition of the term "Commission" and the third relates to the form of prospectus where shares of the same type are being sold during the year under two effective registration statements.

The American Mining Congress is actively interested in the questions involved in the proposals for increased revenue through taxation. They appeared before the Ways and Means Committee of the House to protest the proposals that changes be made in the present depletion and depreciation provisions of the Revenue bill.

Speaking on behalf of the mining industry of the country, H. B. Fernald, Chairman of the Executive Tax Committee of the American Mining Congress, cited statistics showing that the great majority of taxpayers do not evade or avoid their full tax obligations. "In trying to reach a few," Mr. Fernald asked that "injustice should not be done to the many." Some of the proposed recommendations, he told the committee, "will bear unfairly or with undue harshness on many whom you have no intention so to treat. Furthermore, we believe some of them will have an unfavorable effect on revenues and on

business recovery such as you do not desire them to have."

Regarding depreciation and depletion allowances, on which a 25 percent reduction is recommended, Mr. Fernald submitted that no question of tax avoidance is involved in this provision, for unless a taxpayer makes "a reasonable allowance" for depreciation and depletion, as the law now provides, there would be a tax on capital in addition to a tax on income. He stated: "If a corporation, either from amounts contributed by its stockholders or from amounts which it has borrowed, spends \$1,000,000 for mine and mill equipment, it will not properly state its income or profits unless it makes reasonable charges year by year for depreciation on such property. If it fails to make the appropriate charges to provide for this depreciation, it is going to find at the end of the life of the property that what it had been considering as income was to a substantial extent simply the using up of its capital."

"It is not equitable to state," he testified, "that for a period of some three years it will be granted only 75 percent of a reasonable allowance which it may then be permitted to recover by additional charges of future years. It may not have the profits in such future years out of which it could recover the allowances denied to it during this three-year period. Of course, if a company has no profits during this three-year period, it will not suffer from this disallowance of depreciation. In such cases, however, this 25 percent disallowance would give no revenue gain to the Government and there would be no object from the revenue standpoint in making this provision. It is only important in cases where it will mean that a part of the amount which represents a reasonable allowance for depreciation is during these years to be made subject to tax. We submit that this is not fair basis for such taxation."

Mr. Fernald said that the 25 percent reduction would not bear equally on various classes of taxpayers since the taxpayer who owns depreciable property would be materially affected while the company which rents property would be in no way affected by the reduction. In the latter case, the effect would be felt by the owner of the property who would probably be without any opportunity to recover the amount out of rentals he receives. Another inequality, he declared, would result when the reduction is applied to property of a relatively long or of a short life, inasmuch as the effect would not be nearly as important on a property having a 30-year life as one having a 10-year or 15-year life. In the one case, the 25 percent reduction would affect only one-tenth of the total depreciation charge while in the other it would affect from one-third to one-fifth of the total depreciation.

Concerning the proposal of the Treasury that discovery and percentage depletion be eliminated, Mr. Fernald said, "we most strongly protest."

Regarding the recommendations to eliminate the consolidated return, Mr. Fernald stated: "What the consolidated

statement or consolidated return does is to say that even though there may be a subsidiary corporation the true net income shall be reflected in the consolidated statement. The mining company is not to show profits by dealings with their own mill or smelter, nor is its mill and smelter to show profits from their dealings with the mining company which owns them. Only the transactions with outsiders are to be considered as giving rise to profit or loss items. There is no avoidance of taxes involved in the determination of true income and its imposition of taxes upon it."

Mr. Fernald brought out that elimination of the consolidated return would involve many technicalities and disputes. Indeed, he said, many feel that there might be no difference in income tax involved, but it would be better to have the consolidated return than to be subject to all the doubts and difficulties which might arise in the audits of separate returns by the Government.

As to the recommendation that the present recognition now given to distributions out of earnings or profits accumulated prior to March 1, 1913, be eliminated, Mr. Fernald expressed the opinion that the present rule was about the fairest and most practicable that could be devised and that discontinuation would entail numerous complications and problems.

Regarding the proposal to eliminate the foreign tax credit provision of the present law, Mr. Fernald pointed out that the Government receives substantial revenue which would be at stake if the provision were eliminated. To the extent that the foreign business may be hindered or retarded by the elimination of the foreign tax credit, he said, the actual revenue of the Government will suffer for more than the amount of the foreign tax credit now under consideration.

Senator D. A. Callahan of Idaho, representing the Northwest Mining Association as well as the American Mining Congress, also opposed the Treasury proposal for elimination of discovery and percentage depletion. He told the committee that the mining industry is struggling to keep alive, that it has mined ore in many cases during the last few years at an actual loss, that it has not come to the Government for subsidy or special legislation, that it has built up surplus stocks which threaten to weigh down the market for years to come, and that it is endeavoring to get back on its feet but has a long and extremely hazardous road to travel.

"What the metal industry asks of this committee," he said, "is that it withhold action upon this very important subject until more normal conditions prevail. It does not fear a study of the question of depletion. It does not fear considered action upon this subject. It does fear hasty action, and it calls the attention of the committee to this fact, that no matter what system of depletion may be in vogue during the next several years, the difference in revenue to the Govern-

ment will be negligible. The mining industry is not making money. The mining industry has been losing money consistently if we consider the value of its exhausted capital. Therefore we ask most respectfully that no hasty action be taken to upset the well-considered legislation that has put the principle of percentage depletion in the statutes."

American Mining Congress Holds Annual Meeting

(Continued from page 18)

was one of the leading influences in the creation of the Bureau which has been in active operation since 1910.

During the past year the attention of the mining industry has been called in many ways to the apparent lack of support accorded the Bureau, resulting in the curtailment of activities vitally important to the industry, and the men employed therein. This situation is evidenced in many ways; as for example the work of collecting special statistics relating to the coal industry has been absorbed by the National Recovery Administration, and the statistics relating to the petroleum industry has similarly been transferred to the Petroleum Regulatory Commission, both of which bodies were constituted to meet an emergency situation. The work of making the lives of mine employees safer has also been curtailed by reason of the Bureau's lack of financial support.

Our attention has also been called to the fact that the working staff of the Bureau is now occupying diverse scattered locations throughout the city of Washington, reducing most seriously the effective efficiency of the Bureau.

We further understand that at the request of the Honorable Secretary of the Interior, an investigation of the activities of the Bureau has been initiated by a committee largely composed of scientists, to the exclusion of the men who own and operate the mining properties, and who are responsible for the labor employed therein. It is the feeling of the American Mining Congress that the men who operate the mines should be given the fullest opportunity to study the work of the Bureau, making suitable recommendations as to its future activities.

For the reasons outlined above, the American Mining Congress respectfully requests that any further changes in the activities of the Bureau of Mines be withheld, and that a committee appointed by the American Mining Congress be given an early and sufficient opportunity to present its views as to the value of, and the future activities of the Bureau of Mines, to the Honorable Secretary of the Interior, into which department of the Government, we have been given to understand, it is to be formally transferred.

A New Hoist Installation at Homestake

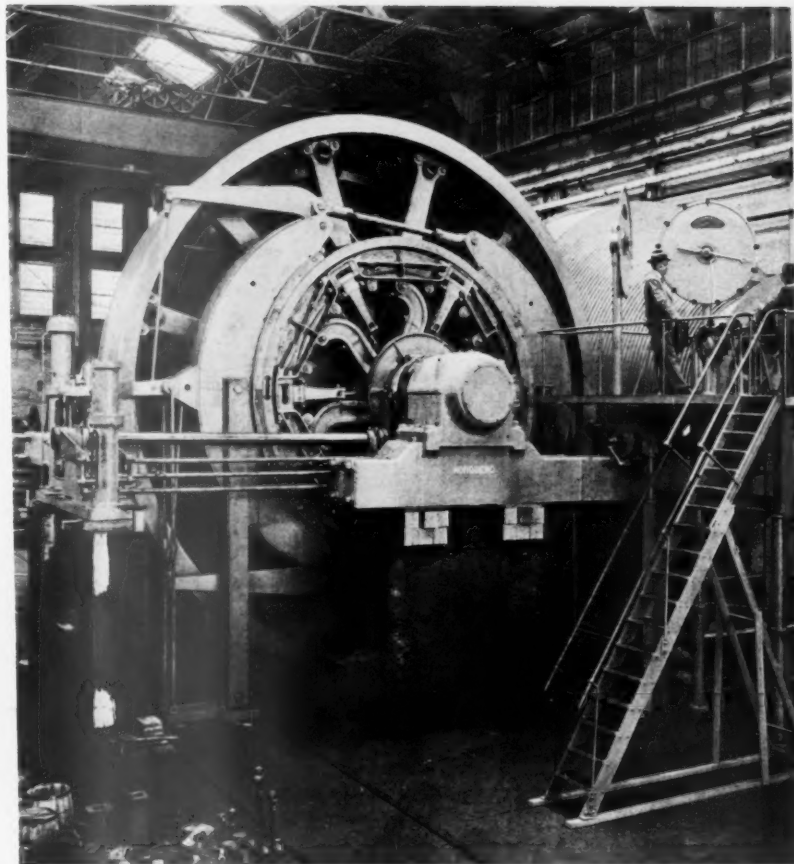
MINE officials will watch with interest the installation of two Nordberg Hoists at the new Ross Shaft of the Homestake Mining Company, Lead, S. Dak. There are two hoists—the one for ore is now in the course of erection and another, practically a duplicate, for men and materials. These hoists are outstanding because of their design and size, they being the largest of their type so far built.

For 56 years Homestake has been a steady producer of gold, and one of the outstanding mining companies of this country. The new Ross Shaft is being sunk in a location where it is believed to be free from earth movement, and will permit of hoisting from a depth of 5,200 ft. instead of 3,200 ft. from the shafts now in use. This new 14 x 19 ft. shaft will have six compartments and will incorporate the latest ideas of shaft construction.

These new hoists will be electrically driven and of the double conical drum type. The arrangement of the drums is quite unusual, in that instead of both being mounted on one shaft they are placed on separate shafts with the drums in tandem. The small diameter of the drum is 12 ft., and increases up the cone until the large diameter of 25 ft. is reached. The ore hoist is grooved to wind 5,400 ft. of 1½-in. rope, the normal hoisting load being 14,000 pounds. The total rope pull is 57,000 pounds. The rope pull for the man hoist is 40,000 pounds based on 5,200 ft. of 1½-in. rope; however, the total rope capacity of the man hoist drums is 5,765 ft. Each drum will be provided with a Nordberg Type parallel motion post brake, 14 ft. in diameter and 21-in. face; also an axial plate friction clutch.

While the size of the drums gives an idea of the size of these hoists, the following data will further bring out their immensity: Each hoist covers a floor space of 56 x 61 ft., weighs about 1,100,000 pounds, and will require 26 railroad cars for shipment. Each drum weighs 210,000 pounds, the drum shaft being 40 ft. 5 in. long and 30 in. in diameter where passing through the drums. The drum shaft weighs 77,000 pounds.

Another unusual feature of these hoists is the arrangement of the drive. At the end opposite the operator's platform is the train of gears driving the hoist drums, the gears being of the continuous tooth Herringbone Type and the largest Herringbone Gears ever used for mine hoist drive. The gears are 12 ft. in diameter with 30-in. face. Each of the 1,500-horsepower motors on the ore hoist is coupled to the pinion shafts, the pinion being forged integral with the shaft. These pinions mesh with the 12-ft. diameter gears on the drum shafts,



One of two Nordberg Hoists being installed at Homestake Mining Company

while between these is the idler gear, which ties and drives the drum shafts together. These gears are enclosed in a heavy steel plate, oil-tight housing; the gears running in oil. For the man hoist, one motor and pinion shaft has been omitted. This was possible since the power required for the man hoist was only half that for the ore hoist. One 1,500-horsepower motor was used in one case and two motors of this same size in the other.

The use of this design of drive and choice of equipment served to advantage from the standpoint of the builder and purchaser. The large gears, pinions, shafts, bearings and motors, are identical on both hoists. This reduced the cost of construction and greatly simplified the problem of carrying spares.

Another feature of this hoist is the system of lubrication, this being of the circulating pressure type. The drum

shafts have hollow bores of 6 in., serving as a passageway for the oil. The drum shaft, pinion and idler shaft bearings are supplied from this system.

These hoists are protected against any emergency that may arise. This includes overspeeding, overwinding, failure of power supply, failing to slow down when reaching landing level, or reversing hoist after reaching limit of travel. In any event, the power is shut off, the brakes set and the hoist stopped. The control mechanism is so arranged that the brakes and clutches interlock. A clutch cannot be released unless its brake is set.

The General Electric Company furnished the electrical equipment, which, besides the motors and controls, includes two motor generator sets. That for the ore hoist has a 1,750 hp., A.C. motor with a 44-ton flywheel; while that for the man hoist is 800 hp. with a 33-ton flywheel.

The Use of Rock-dust to Prevent Mine Accidents*

by D. Harrington†

A CURIOUS situation has arisen during the past few years in connection with the campaign for health and safety in mines. A concerted drive has been made to introduce rock-dust into coal mines to prevent or to limit explosions, while an equally determined effort has been made to eliminate rock-dust from metal mines to prevent or limit miners' consumption and kindred diseases. Rock-dusts in the air of metal mines have probably caused even more deaths and misery among our metal miners and their families than have been caused by explosions among our coal miners and their families. Unquestionably rock-dust should be introduced with suitable precautions into nearly all nonanthracite coal mines as a safety measure, and on the other hand as a health measure rock-dust should be excluded or removed from metal mines or metal-mine air and coal dust from the air of coal mines insofar as is feasible.

The remedy for harm to health from dust in mines of today is chiefly twofold: Use of water to "kill" the dust and use of ventilating current of fresh air to remove or dilute air dustiness where it is not feasible to "kill" the dust by water. In metal mines no drilling of any kind should be allowed without simultaneous use of water, and the water should be under pressure and forced through the drill steel so as to "kill" the dust as it is being formed at the face of the drill hole. Many mines resist this practice because of expense of wet-drilling equipment and of placing and maintaining water lines and water at all working faces; miners resist because they hate to do anything they have not been accustomed to doing, because the use of water entails new responsibilities, and because the water tends to wet the clothing. Many other reasons are given by owners as well as by miners why wet drilling can not be done, but in at least 9 out of 10 mines wet drilling can and should be done.

In coal mines the mining machines should be equipped with water spray, and to be really effective the water should be piped to the face and be under pressure; here again the operator says it is impracticable, expensive, etc., but

the answer to this is that water lines are being kept at working faces in extensive up-to-date coal mines in several States and are being kept at a large number of faces in many metal mines also. In addition to using water on the drilling machines in metal mines and on the mining machines in coal mines, the water, if piped to the faces, can and should be used by the worker to wet down the broken rock or coal, together with surrounding walls, timber, floor, etc., where dust would otherwise accumulate; this is being done now in numerous mines in several States. It is largely due to the much better ventilation of coal mines than of metal mines that coal miners are less afflicted by dust disease than are metal miners. It is also due to some extent to the better ventilation of coal mines that it is feasible to introduce rock-dust into coal mines to prevent or limit explosions and fires and yet not unduly endanger health of workers, because currents of fresh air remove floating particles of dust and few if any dusts which occur in coal or metal mines are harmful to health unless they are present fairly continuously in finely divided form and in large amounts in air breathed by workers through the working shift.

The general, although not universal, practice in some coal mining regions (and a good health and safety practice) demands use of water at working faces to "kill" dust as it is being formed and rock-dusting of the open parts of the mines away from the faces. Most mines rely very little on the use of water, and where rock-dust is used the intent is to carry rock-dusting virtually to the faces, this rock-dusting to the face appears to be poor policy (unless water is unobtainable) as it introduced additional dust at the faces where about 95 percent of the dust in coal mines is formed, thus adding rock-dust to the already coal-dust-impregnated air at working faces, and this is likely ultimately to bring about a very serious health problem. Moreover, cutting coal dry throws much very fine coal dust into the air, settling later on surrounding surfaces; blasting and shoveling also throw much fine dust into the air, later to settle on walls, timbers, roof, and floor, and if 1 or 2 percent of methane (explosive gas) is present, there must in some cases be 80 percent or more of rock-dust (almost impossible to maintain) to prevent ignition of the coal dust of some of our coal

mines. Rock-dusting at the face therefore is not nearly so effective as is the use of water in preventing ignition of dust or in preventing propagation of flame from methane ignition at or near the face; and rock-dusting at coal-mine faces, in addition to being relatively inefficient as to prevention of explosions, will as heretofore stated probably add to a health problem (from dust in air), which in the writer's opinion is already much more serious than is generally believed.

A supplementary precautionary measure in trying to prevent widespread explosions in coal mines is to place concentrations of rock-dust on shelves or troughs or boxes, called rock-dust barriers; these concentrations of rock-dust, sometimes amounting to a ton or more, are supposed to be so arranged that a wave of force in air, such as precedes an explosion, would dump the large amount of fine, dry dust into the air and smother the flame of an oncoming explosion. Barriers are somewhat costly, and as found in actual practice in mines are usually ineffective. It is difficult to make and to maintain them of the correct sensitiveness to insure operation when needed, and the dust in them tends to consolidate by settling or by moisture absorption; they are being used only to a limited extent and then essentially as a reserve precaution.

The total cost of rock-dusting runs from less than 1 cent to as much as 4 or 5 cents per linear foot of underground entry or tunnel. The dust itself where purchased costs from as low as \$3.50 or \$4.50 per ton to as high as \$10 per ton at the mine. Total cost of placing the dust in the mine, including cost of the dust itself, runs from around one-half cent to as high as 2 cents per ton of coal produced.

Use of water at and around working faces and rock-dusting the surfaces of all other accessible dry portions of coal mines, together with the maintenance of active circulation of pure fresh air currents throughout mines and restriction or absolute removal of open flames or arcs are the main factors in the ultimate solution of the combined health-safety problem in coal mines as regards prevention of widespread explosions and fires, as well as the avoidance of diseases of workers from the breathing of harmful quantities of dust.

Rock-dusting is by no means a panacea for coal-mine ills; it will fail to eliminate explosions and fires unless it is done effectively, applied to all accessible surfaces, and renewed often enough to keep the incombustible content of dust to 60 percent or over and unless it is assisted by other good up-to-date methods and practices, yet effective rock-dusting is one of the best of the recently proposed aids to safety in coal mining. There is absolutely no question that from 200 to 300 lives have been saved annually during the past seven or eight years through explosions stopped by rock-dusting, even though fewer than 5 percent of our coal mines are adequately rock-dusted, and only about 30 percent

(Continued on page 33)

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The Coal Saw

by C. D. McLaughlin*

THAT YOU MAY better understand the benefits that we have derived from the use of Coal Saws at our Pioneer Mine, I will first endeavor to give you a brief description of the mining conditions under which our saws are operating.

We are working the Straight Creek Seam which measures from 36 to 44 inches thick. This includes 4 or 5 inches of black rash located next to the roof which breaks up and mixes with the coal when shot. The coal is rather hard in texture and has well defined faces and butts. Rooms are driven 40 feet wide with a track along each rib. Two men are assigned to each room and work in pairs, loading a car on one track and then the other. It usually requires about two days to clean up a room cut yielding approximately 30 tons. Entries are driven 13 feet wide with track in the center. Likewise the loaders work in pairs but are given two places, generally the heading and aircourse. Top is taken in the entries for headroom. The rock is loaded in cars and taken to the outside for disposal. An entry cut yields approximately 10 tons of coal. This together with the slate and rock loaded furnished a full day's work for the two men.

In the majority of places we have a firm slate roof while in some few sections it is sandrock. Taken as a whole the roof may be considered good but owing to the width of our rooms we maintain a timber line within 6 feet of the working faces. The mine is gassy and dusty.

The floor is hard slate. In most places the coal sticks to the floor making it difficult to scrape machine bottoms. For this reason it is desirable to undercut the coal as close to the floor as possible.

We cater largely to domestic trade and have a demand for large lump. It was with the desire to increase our percentage of this size and to reduce our egg, nut, and slack sizes that we turned to coal saws.

Early in January of this year we installed two Joy Brothers 51-B Floor Type Saws. Three more were added about 30 days later giving us a total of five machines at the present time. Until about 30 days ago all of these saws were operated 24 hours a day. During this period we have demonstrated to our entire satisfaction that the machines are practical in our mine. As a further indica-

tion of this feeling I may mention that my company has recently installed five of these same type saws in one of their other mines where they are working the Harlan Seam. While I cannot speak with authority on the results obtained at this mine, I do understand they have been very encouraging.

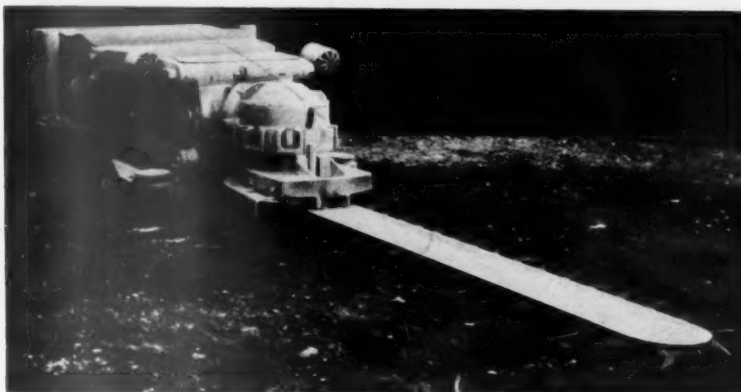
We have had a few minor delays with our saws but attribute these mostly to the inexperience of our operators and the tendency of these men to neglect reporting necessary adjustments at the proper time. As most of you will agree this attitude is quite common when any machine is double shifted. We have had no major breakdowns and at the present time our saws require no more attention than other types of mining machines we have used, if as much. Our maintenance costs, including labor and material thus far, have been negligible.

Owing to the nature of our coal seam it is necessary to make only one horizontal cut with the saws. The coal parts freely from the rash and the rash parts from the roof thereby making it unnecessary to cut the coal at the top to separate it from the impurities. In the rooms four vertical cuts are made between the floor and roof while in the entries only three vertical cuts are necessary. As soon as the vertical cuts have been made the coal breaks off of its own weight at the back of the cut. As it sets down cracks develop in the large blocks due to the natural fractures in the coal. By the use of bars our miners roll out large slabs of coal and split it down with picks to sizes that can be loaded into the mine cars. We have found that in our mine it is not necessary to pull out a "Key Block" which I understand is customary to do in most mines where coal saws are being used.

Furthermore we have not had to employ the use of the hydraulic breaker pad, a coal saw accessory, to dislodge the coal after it has been sawed. Neither have we had to do any drilling or shooting. The miner is able to remove the rash from the top of the coal in large pieces and thus avoid having it mix with the coal. As a result of this we have been able to greatly reduce the ash analysis of our coal, especially the 2-inch nut and slack size.

We have not yet determined the full capacity of our saws. The machines are operated during the loading shift and of course do not always have places ready to saw. There have been occasions when the saw has made the one horizontal and four vertical cuts in a 40-foot room in 35 and 45 minutes, but for a period of time 6 rooms yielding approximately 180 tons is about the average for an 8-hour shift. This is about the same as we obtained from our short-wall mining machines under the same conditions and circumstances. As our operators gain experience we believe some further increases in tonnage will be obtained from the saws.

Two men, an operator and helper, are required to operate the saw. During the early training period these men were paid by the hour. On March 15 a contract rate of payment was put into effect. This rate is 1 cent per ton more than we paid our shortwall machine crews. The loading rate is the same for sawed coal as for shot coal. The company furnished labor and material to drill and shoot the coal which amounted to 3.8 cents per ton. This being eliminated, our cost in the mine car is accordingly 2.8 cents per ton less for sawed coal than for shot coal.



Position for horizontal cut at bottom of seam

* Superintendent Pioneer Coal Company.

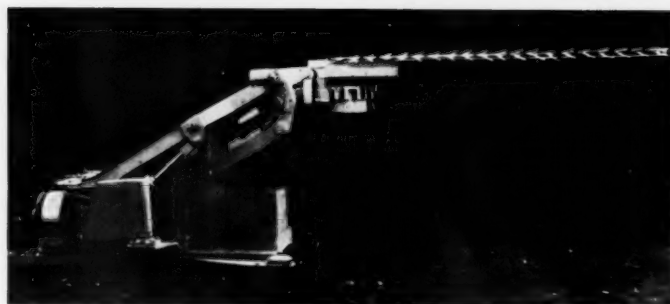
We are inclined to agree with the coal saw manufacturer that the greatest obstacle to the success of coal saws in a mine is tradition. At least such has been our experience. It was necessary for us to enforce rigid discipline. Before accepting any complaints of our men that this or that was not right we would investigate the matter carefully. With a very few exceptions we found these complaints were unwarranted and was just a matter of educating the men as to the proper way of doing the work. It was not long, however, until our men showed a preference for loading sawed coal. They found it was much easier to separate the impurities at the working face with a consequent reduction in the number of penalties imposed for loading dirty coal. They were also able to load more and larger lump with no more labor which resulted in steadier work for them.

As previously mentioned our primary interest was to increase our percentage of lump coal. This we have succeeded in doing to a very satisfactory degree.

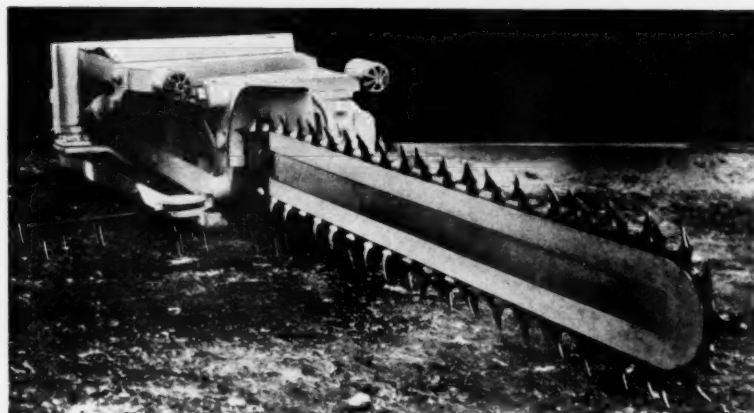
	Shot Coal	Sawed Coal
	Percent	Percent
4-in. and over, lump.....	35	66
2-in. x 4-in. egg.....	15	9
0-in. x 2-in. nut and slack.....	50	25
Totals.....	100	100

This fact is borne out by a comparison of our screen results at the tippie which are given on preceding page.

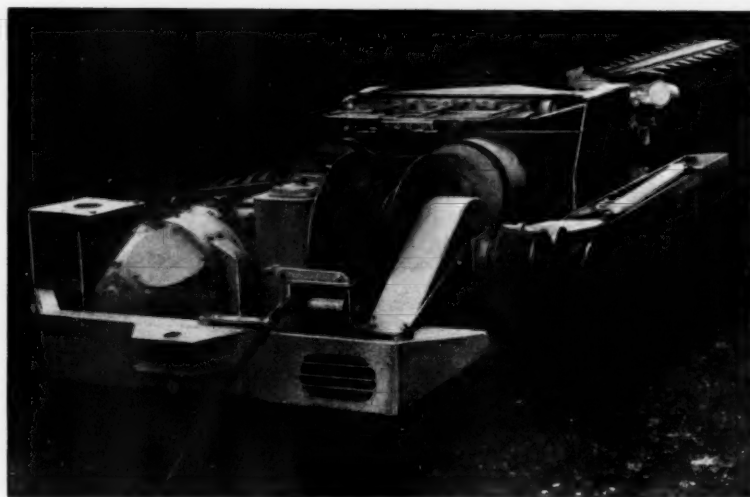
I may add for your further information that we are confident as a result of special tests made that we can show a greater increase in the percentage of our lump. About 75 percent of our output is recovered from rooms where there is a clearance of only 7 to 9 inches between the top of the mine car and the roof. As a result of this the miner makes a great deal of small coal while breaking the large lumps up into sizes that he can get into the cars. I have already mentioned that we take top in our entries. By maintaining this headroom right up to the face of the headings we were able to run some special screen tests of sawed coal loaded where there was sufficient clearance over the mine cars to permit the miner loading the largest lumps he could lift. We found that our lump increased to as much as 74 percent of the total dumped or 8 percent more than before mentioned with a corresponding decrease in our nut and slack sizes. Our only means of maintaining this result is to use lower mine cars. The relative height of your mine



Position for horizontal cut at top of seam



For a vertical cut



Power truck with saw on it for moving

car to your seam will have a very definite bearing on the result obtained. To further check ourselves on this question we built two cars 7 inches lower than those in use. These cars have made a great many trips and without exception have reached the tippie with much better looking coal than we obtain in our regular cars. I bring this point out because if you should have occasion to consider the installation of Coal Saws the

relative height of your mine cars to that of your seam will have a very definite bearing on the results you will obtain.

Our sawed lump coal has made a very favorable impression with our trade. By eliminating explosives we not only obtain more and larger lumps, but lumps that are not shocked or shattered. Consequently the coal withstands handling and transportation with far less degradation than was true of our shot coal.

The Use of the Shaking Conveyor in Anthracite Mining

by Jerome McCrystle*

IN THE anthracite field of Pennsylvania, it is estimated that there are 900 shaking conveyors in active operation as of April 1, 1933. Of this number, about 300 were installed during the past 12 months—an increase of 50 percent on the number employed prior to that time. The acceptance of the shaking chute as having a distinct field in anthracite mining practice dates from 1927; present growth and experience, consequently, is the outcome of scarcely 5 years of actual usage. In addition to these shaking conveyors proper, i. e., conveyors having an accentuated reciprocal motion, there are probably not less than 200 so-called "Jigglers"; drives that impart a uniform forward and backward motion to the trough line by means of a cam or eccentric. These latter operate on pitches approaching a gravity or running pitch where but a slight excitation of the pan line is necessary to put the coal in motion. There are also a number of air drives, estimated at less than 100, in mines where compressed air is more conveniently at hand than electric current, or where the possibility of an explosive mixture of methane prohibits the use of electric power. Therefore, installations of shaking equipment of all descriptions, will total about 1,150 complete units.

The shaking conveyor which has had the most general application is the type rated to deliver about 20 tons per hour over a trough having a cross-sectional area of 42½ square inches or 275 square centimeters on a gradient equivalent to horizontal. This type is usually motor driven by either five 7½, or 10 horsepower shunt wound direct current motors or squirrel cage alternating current motors at speeds of either 850 or 1,140 revolutions per minute. This size unit is relatively easy to handle and affords ample range and capacity for ordinary room and pillar mining.

There are no reasonably accurate figures available, such as are compiled in the bituminous field, which show the anthracite tonnage loaded mechanically. It may, however, serve some purpose in estimating the degree of shaking conveyor mechanization, to state that at some collieries coal of this origin averages as much as 50 percent of the total output, while there are some single openings 100 percent shaker mechanized. In mining coal with the shaker both the piece rate

or contract system and the company work or day rate system are used extensively. As a general rule the company purchases and maintains the equipment and loans it to the miner without any direct charge for its use. There are, however, in some localities, instances where the miner has purchased and maintains his own equipment.

The shaking conveyor is being used to advantage on pitches from the horizontal upwards to 20 degrees in favor of the load, and in veins whose working thickness is above 24 inches, although loading efficiency tapers off rapidly below a height of 30 inches. To appraise the economic value of the shaking conveyor in meeting the conditions that are peculiar to anthracite mining, the dual purpose of the conveyor: first, as a means of face transportation; second, as a loading facility,—must be considered. To have a general applicability, the conveyor must be capable of readily accommodating its operation to meet such conditions as shooting off the solid and loading behind an undercutter; varying pitches and bed thicknesses; longwall and room and pillar mining; the removal of vein impurities at the working face; the recovery of narrow, winding pillars, practically buried by gob from the adjoining chambers; economic operation in caved and flushed areas, and in crossing wide cross-cuts and other voids filled with gob; as a vehicle for gobbing rock; and working under broken roof. One of the items of major expense in anthracite mining is the ripping of rock that is necessary in order to provide height in which to work, particularly, when the mine car is taken to the working face;

Practically all so-called mechanical mining in the anthracite field is confined to a pitch range less than 20 degrees. The shaking conveyor, scraper loader, belt conveyor and drag or chain conveyor, are all designed to operate in this same range. Each of these types of equipment possess certain advantages in meeting certain conditions, although there is a wide overlapping in their general purpose. There is some divergence of opinion at this writing as to their relative merits and preferable application in meeting varied requirements; it appears probable, in light of present experience, that as mechanization progresses and dependable cost and performance curves are obtained, one type will be found to supplement another, and each will have its especial function in the mining and development processes.

Coincident with the falling off in general production during the past few years, the tonnage produced mechanically has arisen sharply. This parallels bituminous experience where decreasing markets likewise witnessed a rapid increase in coal of mechanical origin. This upward mechanical trend has been reflected in a general toning-up of the construction of shaking units already on the market, and the introduction of new models of improved design. This has been accompanied by an almost general



improvement in the commonly used accessories, and the constant addition of devices intended to facilitate the use and scope of the shaking conveyor.

Speaking of the latter first, among new and improved accessories might be noted: a smaller duckbill specifically designed to operate with equipment of the 10-horsepower size; drive jacks, of the ball bearing type for light units; inexpensive ball-frames that can be used as guide frames to stay any eccentricity of the trough motion; car movers, small winches operated by the shaker drive directly, or indirectly through by the pan movement; dolly or pony trucks designed to travel in the trough line as an aid in delivering timber and material to the working face; radius chutes that permit turning the pan line as much as 90



the low roof height under which it is possible to operate the conveyor and the avoidance thereby of this rock deadwork is a decisive factor in the adoption of shaker mining.

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degrees to handle the coal across an undercut face and "Y" chutes that allow the operation of two complete trough lines to a single delivery point. There is also apparent a decided trend towards the standardization of troughs and other accessories in common use so that the product of one manufacturer is largely interchangeable with that of another.

In the construction of the driving units there has been a general strengthening of parts that gave trouble. Drive cases are now generally of cast steel instead of cast iron or semi-steel as formerly. Gears are generally heat treated, ball or roller bearings replace plain bearings, rocker arms are so attached that they no longer work loose on the rocker shaft, motors are so mounted that distortion of the bed plate does not affect the meshing of the motor pinion, and the open type drive unit with exposed gearing has practically disappeared in new installations. Drive chutes are of heavier metal and reinforced their entire length; puller or drive rods are generally longer and with a ball joint to compensate for any misalignment between drive and trough line. The new drive models are equipped with two rocker arms and can be used at will as side drives, overhead or underneath drives, single or double arm. All this has permitted extending the effective range of the shaker trough line from 300 feet to a fairly dependable operation at somewhat over 600 feet.

It is in the curve of the shaking motion itself, however, where probably the greatest improvement can be noted. Early drives and motions were imported bodily from other fields to meet anthracite characteristics as best they might; current designs have been developed to meet specifically such requirements of anthracite mining as a lower coefficient of friction, wet coal, up hill shaking and comparatively heavy pitches. This is manifest in longer and fewer strokes of standard models, and refinements in the characteristic of the stroke, particularly in the change of stroke direction. Rocker arms are constructed to give a choice of long or short stroke by merely changing the point of connection. The length of conveyor strokes for the smaller model machines usually run from 400 to 500 inches per minute for the forward stroke, and of course an equal distance of reverse stroke; the number of strokes varies from 100 to slightly less than 70 strokes per minute.

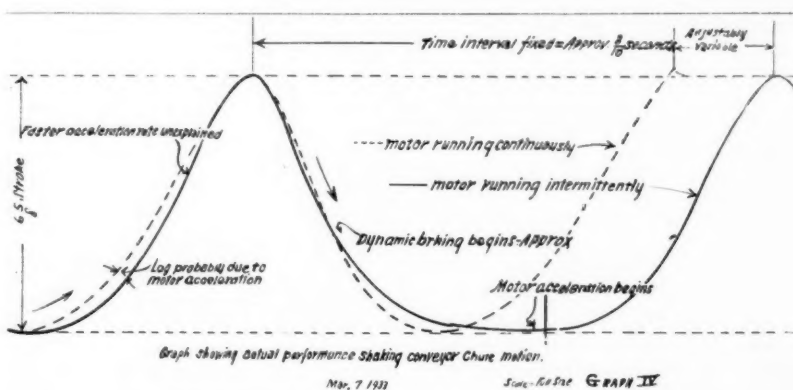
The motion curves of the shaking motion has been reduced, so far as it is practical in view of the number of vari-

ables that are encountered, to a mathematical formula. The reputable manufacturer is no longer content with a motion that works well under some happy combination of circumstances. The endeavor has been to develop a general type that will perform creditably under the average conditions to be met, and which can readily be changed by a substitution of a gear or link assembly to meet a specific requirement.

When the trough gradient definitely favors the transportation of the product, retardation in the flow of the product induced by the counter movement of the trough line is rendered negligible.

first, by holding the pan grade to no more adverse pitch than it will conveniently handle; second, using a pit car loader at the delivery of the shaking conveyor to elevate the coal to the mine car. The first plan involves blocking up the trough line; this is quite expensive at times and reduces the conveying capacity; the second method using a pit car loader is positive in its action, but involves another piece of equipment, maintenance, and the extra handling of the coal entails additional breakage.

The accompanying Graph No. 4 shows an adaptation of the usual shaking motion to permit moving coal on adverse



When the coal must be transported up-grade, the tendency to reverse the direction of flow is accentuated. Some of this can be overcome by inserting into the trough line so-called lagged chutes; chutes that, while not retarding the forward flow of the coal, impose an obstruction in the shape of the floor of the pan to any backward flow. This expedient does not yield uniformly satisfactory results. The ability to shake up hill is increased by a violent motion of the pan line but this can be done only at the expense of destroying the drive and pan line, loosening up the trough connections, and curtailing the length of trough.

Where veins are thin and bottom rock in the gangways is shot for height, the setting up of the drive and the delivery of coal direct to the mine car is quite simple. In the thicker beds, however, where the drive must set essentially on the gangway level, elevating the coal from this elevation to the top of the mine car presents some difficulties, particularly when no favoring pitch in the trough gradient exists that would restrict any backward flow. This same difficulty of up-hill flow is encountered in gangway development with a shaking conveyor. There are two methods in general use for elevating this coal: the

grades as high as 16 percent. Note the supernormal time allowed at the change to forward stroke for the coal to come to a dead rest before again continuing on its positive travel. In addition to this controlled motion, some of the unusual features of this drive are a hinged joint between discharging end of conveyor and its normal grade to permit changing the vertical travel of the coal: the discharge or elevated section of the trough reciprocates in the same plane as the pitch, while the inby or horizontal end of the conveyor operates likewise on the same plane as its trough line. This retarded motion is obtained by controlling the motor by means of a system of contactors and circuits which introduce into the motor armature circuit an adjustable resistance, an opening of the armature circuit or a closed dynamic breaking circuit, at the will of the attendant. As the length of trough line increases, the dynamic braking can be curtailed and the retarded motion obtained by opening the armature circuit or inserting resistance.

This drive mechanism is primarily designed for the development of gangways and can be used with a duckbill. A small winch operated by the shaker drive permits moving the cars as they are loaded. The advantages sought by this arrange-

ment are: Facility in loading cars direct from the floor level with no special elevating equipment; reduction in the cost of local transportation—the locomotive spots as many cars as are required and the shaker crew places them as needed. The trough line is laid to one side of the gangway so as not to interfere with the placing of cars and the outfit is so arranged that the development can be carried on continuously.

Another new drive intended to meet the variants of wet and dry coal, pitch and up-hill shaking, duckbill, long and short trough lengths, lump coal and slack, admits of three distinct motions or "kicks"; one hard, one medium and one soft. It also permits a change in the length of stroke of each of these motions and a choice of number of strokes. The change is made through a change of a link assembly. This drive is adapted to duckbill work, heavy capacity loading and for use as a mother conveyor.

The shaking conveyor has proven to have a decided value in development work; it permits in gangways where bottom rock is taken, to mine the coal first and then lift the rock, or to alternately load the coal and then the rock, daily. Ordinarily where the shaking conveyor has been installed to develop gangway, it has permitted a cost reduction of approximately 25 percent and double the speed obtained by exclusively hand operation. Where the duckbill is used in rock and coal there are some records showing more than 50 percent cost reduction and three to four times the speed of development that could be obtained hand fashion. Driving counter gangway with duckbill 12 feet wide in a bed 5 feet thick with no rock being lifted has shown an average return of 5.3 cars of 3-ton capacity per 8-hour man-day. Figures on reopening caved ground with the idea of using the development conveyor as a mother conveyor, with the smaller area required for the conveyor, has obtained economies of upwards of 25 percent in labor cost alone under the cost for gangway work, full hand operation, under similar conditions. Where the rock strata between veins is thin and the overlying or underlying bed is mined through rock holes, the use of the shaking conveyor in the undeveloped vein as a "Mother" conveyor, has shown economies averaging 33 percent, including the cost of the rock holes. As a general figure to gauge the economic value of the shaking conveyor—thick and thin veins—solid and caved ground mining,—shaking chutes are being installed on the hypothesis that by eliminating delays, curtailing transportation and facilitating loading at the face, they will, on a double shift, pay for themselves in not over 6 months. Of course any figure of this

nature must be subject to wide variation in individual cases.

Delays due to failure of mechanical or electrical equipment should be negligible. Figures at the Harry E. Colliery of The Wyoming Valley Collieries Company show on 21 units on which a check has been kept, a delay of less than three-quarters of an hour per shift on all units—but 2 minutes per unit per shift that actually affected loading of coal. Much of this delay was due to breaking in new men.

The cost of power, maintenance and depreciation can only be stated in a general way. The power used on the average shaker, loading coal shot off the solid, will average somewhat less than 4 horsepower for about 6 hours per shift. A representative cost on the average loading time, and at prevailing power rates, can readily be computed. Drives as at present constructed have a life of not less than 4 years, and a depreciation for this number of years should prove conservative. Observations show that well constructed trough and ball frames and swivels, have a life of two to three years on the whole. Maintenance and replacements is a more difficult item on which to affix a value. Figures on units in operation 6 months, day and night, an equivalent of one year, show a cost of 2 cents per ton for material alone. It is the custom with some companies to set aside about 10 cents per marketable ton to defray all these items including the labor required for repairs and overhauling. This method of course takes no account of the contingent savings affected by shaking chute operation such as economy in rail, ties, and transportation, mine car repairs, mules, and the other phases of operation on which shaker mining has a wholesome effect.

The technique of shaker mining differs very little, so far as the workmen are concerned, from ordinary hand mining. Where the miner and his laborers were assigned one place and loaded into the mine car, they now load into a shaking chute. There are however some bad practices which creep into shaker work, and it is possible to hasten efficient performance by some educational work in the early stages. One of our superintendents who has had unusual success with shaking conveyors formulated a set of rules covering completely the miner's duties and obligations and the approved manner of performing routine work. Very beneficial results were uniformly achieved by this system. In anthracite practice where shaking conveyors are installed on a major scale, it is customary to appoint a man having proved mechanical and electrical knowledge to act as an inspector of equipment and its care.

The operation of the conveyor and responsibility for performance comes directly under the assistant foreman who has jurisdiction where the unit is installed. In addition to this supervision, each colliery usually has a mechanical mining foreman, who assists the local underground officials and looks after the placing and transferring of units, supplies, and the other details associated with this branch of mining. It has been found good practice to send the drive to the shop every six months for an overhauling.

In paying the workmen for operation on shaking conveyors, there are three general methods in use, different collieries favoring different methods. First, the unit may be operated on a day-work basis; second, a miner is given charge of the operation and paid on a piece or contract rate, and the miner then in turn pays his laborers out of his earnings; the third plan is similar to the second except the laborers are in effect on a piece rate also, receiving a definite percentage of the total earnings.

Before inaugurating a program of shaking conveyor mining, it will be found a highly desirable preliminary, to make a survey of power conditions. Modern drives have been designed to give their best performance using a definite number of strokes per minute. Voltage excessively low or abnormally high may wholly counteract their ability to transport coal. Probably more trouble has been experienced through high voltage than low voltage. High voltage results in overspeeding of the motor which is usually further complicated by the fact that the motor is oversize and consequently only partly loaded and its effective speed will therefore run higher than its rated full load speed, for which the drive has been designed. Low voltage causes frequent power failures, and where the starting equipment has a low voltage release, the men at the face lose much time traveling between the gangway and the face.

At present the shaking conveyor has been applied to the systems of mining and development that prevailed prior to its use. It is probable that where a section is developed intended exclusively for shaking mining, a somewhat longer distance between gangways will in time obtain, and mining layouts will be projected expressly to favor the use of the shaking conveyor.

Stump Air-Flow Preparation Plant of Barnes Coal Company

by Richard T. Todhunter*

THE PROPERTIES of the Barnes Coal Company are situated in Cambria County, near Bakerton, Pa., the mines being designated as Barnes Coal Company Mines, Drifts Nos. 14 and 15. The system of mining is room and pillar and conveyor loading. The approximate percentage of conveyor loading is 19 percent, which is practically all from No. 15 Mine. About 60 percent of mining is pillar work, the remaining 40 percent being solid work.

The preparation plant consists of two units—the Marcus tippie, built in 1931, and the cleaning plant, which was put into operation in January, 1933. Both the tippie and the air-cleaning plant, which is of the Stump air-flow process, were designed and built by Roberts and Schaefer Company, of Chicago.

The run-of-mine coal is received from the shield of the dump, which delivers the coal into a weigh basket. This is of the double-acting type, complete with quick-reading dial. After weighing, the coal is delivered to a feeder hopper in which a by-pass is provided, so that when mine rock is dumped and passed through the double-acting weigh basket it is delivered to a rock-feeder hopper.

A reciprocating feeder feeds the run-of-mine from the feeder hopper under the weigh box to a 42-inch belt conveyor for conveying the coal to the Marcus screen house. Another reciprocating feeder feeds the mine rock from its feed hopper to a second belt conveyor of 36-inch width to the rock bin in the screen house. These belt conveyors run side by side, being housed in a common conveyor gallery.

A Marcus screen 6 feet wide receives the run-of-mine coal from the 42-inch belt conveyor. As the tippie loads run-of-mine onto two railroad tracks, the prime function of the Marcus screen is to screen the run-of-mine into 3-inch lump for hand picking and 3 by 0 inch screenings, which is delivered to the air-flow cleaning plant. This Marcus screen also reunites the picked lump coal and the clean coal from the cleaning plant as prepared run-of-mine.

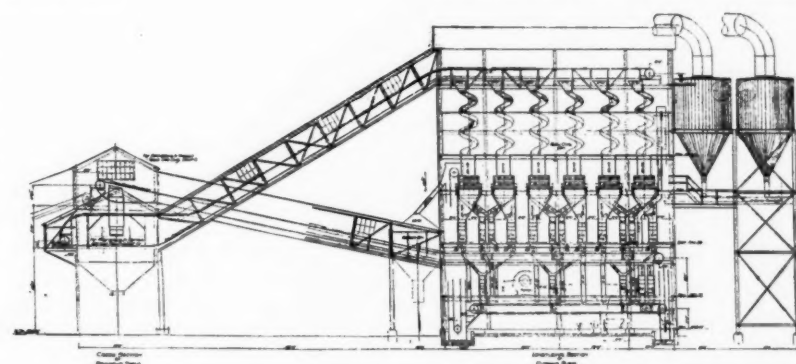
The 3-inch slack from the Marcus screen is received from the bottom deck by a flight conveyor at the rate of 400 to 450 tons per hour, and it has handled the output of the mine when dumping at the rate of 600 tons per hour. (See lantern slide for side elevation of cleaning plant.) This flight conveyor runs

parallel to the loading tracks and delivers the screenings to a 150-ton raw-coal bin in the cleaning plant proper, the function of this bin being to enable the mixing of coals from our No. 14 and No. 15 mines, as the coal is dumped in whatever proportions we desire at the dump house. Slide gates are provided in the conveyor over the bins for even distribution.

Attention might be called at this time to the overall dimensions of the cleaning plant. It is housed in a building 52 feet long and 34 feet wide, with an average height of 54 feet. In this comparatively small building are the entire cleaning facilities for storing 150 tons of coal and for cleaning the 3 by 0 inch slack at the contract rate of 360 tons of raw feed per hour. The cleaning plant has, however, been able to take all of the coal we have been able to put to it. The dust collector supports are not included in these dimensions, as they occupy an additional space of 28 by 13 feet.

From the 150-ton bin the coal is fed by a battery of six rotary feeders to six Ro-Sieve screens, which divide the coal into 3 by $\frac{1}{4}$ inch, $\frac{1}{4}$ by $\frac{1}{4}$ inch, and $\frac{1}{4}$ by 0 inch sizes. The three size products are delivered to their respective air-flow units for cleaning—

Three 18-inch wide units for the 3 by $\frac{1}{4}$ inch coal.



Three 18-inch wide units for the $\frac{1}{4}$ by $\frac{1}{4}$ inch coal.

Six 24-inch units for the $\frac{1}{4}$ by 0 inch coal.

Making a total of 12 primary units.

This combination of feeders, screens, and stump cleaning units divides the plant into three units, and it is therefore possible to screen and clean at one-third or two-thirds capacity if and when necessary.

The air-flow units are three-product machines making a clean coal, middlings, and refuse and a brief description of a unit may be in order.

The stump air-flow coal cleaner consists of an airtight metal box, in which is situated a pervious deck of special construction with an inner air resistance element, which insures the proper distribution of air without a multiplicity of shutters and air ducts. Air is admitted underneath this deck through a rotating shutter which pulsates the air and permits the positive stratification of the coal and refuse with a minimum of air consumption. At the discharge end of the machine there are two adjustable openings for the refuse and middlings and, beyond these, chambers in which refuse and middlings are controlled by pivoted gates. The openings of these gates are maintained by a special type of automatic dash pot consisting of a float box within a chamber filled with water (or a non-freezing solution), and so arranged that the air pressure beneath the deck controls the position of the float. When the refuse material accumulates on the deck there is a slight increase of air pressure within the box, causing the float to lift and the refuse gate to open, permitting the excess of refuse to flow out of the machine, but causing the gate to return automatically to its normal position when this refuse has been elimi-

nated. A special adjustable spring and counterweight are attached to insure the proper balance of this operating mechanism. The middlings discharge opening is located just above the refuse discharge and the middlings gate is connected by a separate operating rod to the same control mechanism that operates the refuse gates.

The operating levers are equipped throughout with ball bearings and the

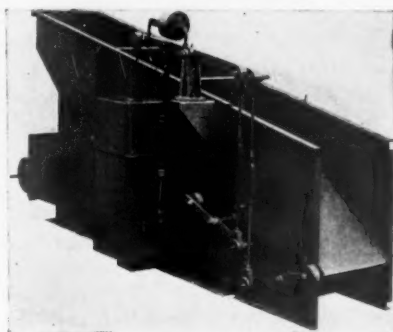
* General Manager Barnes & Tucker Company.

weights of the float and middlings and refuse gates are accurately counter-weighted so as to insure perfect balance and sensitive operation.

Owing to the fact that the cleaner is stationary, it is possible to provide it with an absolutely dust-tight hood, rigidly attached to the top angles, so that there will be no dust whatever originating at this cleaner.

Clean coal, refuse, and middlings chutes are provided with suitable sampling and inspection doors.

Because of the simplicity of its construction and design, the stump air-flow machine is low in air consumption, low in power cost for cleaning, low in cost of dust collection recovery, low in maintenance cost, and requires less floor space than other machines of like capacity.



Stump Air-Flow Coal Cleaner

Profiting by the experiences gained by our experiments, a new stump air-flow unit has been perfected and is on display at this Congress. (See chart.)

The 12 primary units enumerated above deliver their clean coal to the clean-coal conveyor, which delivers it to the Marcus screen in the tippie for mixing with the picked lump, while either the middlings or refuse, or both, can be delivered to five secondary stump air-flow units for recleaning, these units being located on the floor below. When desired the refuse from the 12 primary units can be delivered direct to the refuse conveyor and elevated for disposal to the refuse bin adjoining the cleaning plant.

The middlings, or middlings and refuse combined, that are delivered to the five stump recleaners are delivered as independent sizes direct from the machines above. In other words, there is provided—

One 18-inch unit for retreating the 3 by $\frac{3}{4}$ inch middlings and refuse product.

One 18-inch unit for the $\frac{3}{4}$ by $\frac{1}{4}$ inch product.

Three 18-inch units for the $\frac{1}{4}$ -inch material.

We might note that it was not origi-

nally intended to treat 3-inch coal, the limit of size being assumed to be 2 inches, but these machines have handled the 2 by 3 inch size without difficulty and have enabled us to remove six or seven pickers from the Marcus screen. This saving in itself has helped offset the cost of operating the tippie and cleaning plant.

The three products of each of the recleaning units can be handled in several different ways: The middlings and refuse, or the refuse alone, can be discarded to the refuse bin and the clean coal delivered to the clean-coal conveyor, or the middlings alone can join the clean coal at the clean-coal conveyor, or it can be by-passed and returned to the raw-coal feed. The quality of the clean coal desired determines the process of disposing of these products. At the present time we are producing a clean run-of-mine coal of approximately 6 to 6.30 ash and 1.50 to 1.60 sulphur of mixed coals from our two mines, with a rejection of 4 percent by actual scale weights of refuse.

The refuse from the 3-inch lump pickings in the tippie is delivered by chutes to shaker trough actuated by the Marcus screen, which delivers this refuse to a separate pickings bin in the tippie. All refuse, from both tippie and cleaner refuse bins, is hauled by trucks to refuse disposal dump.

Regarding the air supply of the stump air-flow units, it was found more economical to install plenum chambers behind the units instead of separate fans for each unit. Air for each unit is drawn from these plenum chambers through the medium of the flutter valves, which are so hooked up that no two valves are

drawing at once on the supply of air in the plenum chamber. There is—

One plenum chamber furnishing the air to the primary 3 by $\frac{3}{4}$ inch and $\frac{3}{4}$ by $\frac{1}{4}$ inch units.

One plenum chamber for the primary $\frac{3}{4}$ by 0 inch units.

One plenum chamber for furnishing air for the five recleaner units.

Each plenum chamber has its separate fan.

The dust from all of the units and the dust from the Ro-Sieve screens is collected and delivered to two Day Collectors.

The entire structure is of steel, the only wood used being in the floors.

Ample windows and skylights are provided, and all machinery is of either V-belt drive or speed-reducer units with automatic lubricating systems. All electric equipment is of Westinghouse make and design.

As a matter of interest, the actual load of the entire cleaning plant, including dust collection, is slightly over 1 horsepower per ton of coal cleaned.

The total air required for all cleaning units is 100,000 cubic feet per minute for the tonnage of 400 tons per hour.

May we call your attention to the simplicity of elevating and conveying machinery in this installation. One raw-coal conveyor, one clean-coal conveyor, one middlings and refuse conveyor, one middlings coal elevator, and one final refuse elevator cover all the large moving parts for a tonnage of 400 plus per hour. The entire cleaning plant requires only two men for operation. We believe that this cleaner is about as simple and economical as could be designed for our tonnage and conditions.



Preparation plant of Barnes Coal Company

Effective Blasting Means Increased Profits and Safety

by C. J. Sandoe*

MUCH is required of a modern coal operator in the way of constant study and experimenting to reduce the cost and improve the quality of his product so that he can more effectively meet the constant competition and pressure from other fuels. To this end in the mines of our company, we have been doing some studying and experimenting in connection with the blasting of coal.

In powder blasting, we are all familiar with obnoxious gases, fires, smoke, and the shattering forces that sometimes creep into the roof loosening the top coal and rock and the falls resulting therefrom. These are some of the ordinary hazards with which men working at the face are constantly confronted where powder is used for blasting. These hazards actually are the cause of many of our most serious accidents. We are also familiar with the shattering effect of powder on the coal. A slight drop of a large lump of coal will sometimes collapse into screenings. We have all had complaints from the screenings in the cars at destinations. This is not all due to improper screening or preparation. Some is the result of the shattering effect on the coal from blasting, coupled with the jarring received in transportation.

The problems connected with blasting of coal have apparently always been a constant source of great worry to the operator, and much experimenting has been done to overcome these problems. Most of the study has been toward controlling the force of the explosion so as to concentrate the energy from the explosion in a certain spot or in a certain direction. Recently, I was told of a novel device that was patented in 1854 and had for its objective this very thing. In later years, an effort has been made to obtain the same result by heating water and creating a steam pressure. Still later, we have had the safety cartridge, the explosive cartridge, and several devices called blasting cartridges. None of these were generally used until the different grades of powder were put in pellet form. Permissible powder has been introduced to aid in heavy blasting.

There has also been developed among our present-day methods a plan of blasting through the expansion of gases. This method is known as Cardox blasting and it is to this method that I desire briefly to call your attention. In the



course of our experience, I believe we have tried all of the proven grades of explosives. In November, 1931, we made our first test of the Cardox method of blasting coal at our St. Ellen Mine, near O'Fallen, Ill. In this test we were interested in the two problems mentioned—the safety factor, and the making of a better grade of coal. At this particular mine, we have a limestone roof and no large quantity of gas. After many obstacles in the way of interference, other than the actual handling of this particular method, we found that this method of blasting reduced our accident hazard and improved the quality of our coal. The latter improvement was revealed in our sales realization and this, I believe, is the ultimate test.

The coal at St. Ellen Mine is loaded with the larger type mechanical loaders. Machines of this type add to the breakage in the coal where the coal has the slightest tendency to shatter. Nevertheless, in using Cardox blasting with this type of machine, we have made a reduction in our 2-inch screenings of approximately 19 percent. The greater part of the reduction has been in the number four and five sizes and the greatest increase has been in the 6-inch lump which is increased approximately 13 percent. In the 6 by 3-inch egg, there has been an increase of approximately 6 percent, while the 3 by 2-inch and 2 by 1½-inch have remained about the same in percentage. This would seem to justify the conclusion that coal blasted through this method would handle much better than that blasted by powder. I might mention, also, that an improvement is noticed in the appearance of Cardox blasted coal. It seems brighter

and cleaner. The impurities in the coal are usually along the fracture of the coal and with Cardox blasting the fracture seems to follow more generally natural lines and as a result the coal is more easily cleaned. Also, due to the reduction in the number four and five sizes, there is a marked improvement in the quality of the 1½-inch screenings.

As a factor in reducing our accident hazard, our limited experience has shown that Cardox blasting is most effective. Although I do not want to appear an extremist or partial toward Cardox blasting, it actually seems to me that as I study it and the results we have had, the use of this method is one of the greatest steps toward safety and health of the miners that has been introduced in the mines in a number of years. Obviously, it makes for the elimination of obnoxious gas and smoke in rooms where miners have to work. In the loading of coal with the large type mechanical loaders, there is very little coal dust held in suspension in the air, eliminating nose, throat, and lung irritations to the men working. The hazard of mine coal fires is done away with and with it goes the dangers connected with the sealing off of the same. The danger connected with the handling, transportation and storage of explosives in the mine is eliminated and the possibility of dust and gas explosions from blasting coal has been reduced to a minimum. Cardox blasting appears to have little effect on the roof and walls and since we have been using it we have had less falls at the face than before. Falls, I believe, account for the majority of serious injuries in the mines. Since using this method, we have really only had one accident resulting from the Cardox blasting itself. This accident occurred shortly after we began blasting in this manner. A shot-firer was struck on the leg by a flying shell because he was careless and did not obey rules. He was superficially bruised and lost only three days. Although the miners, at first, were slow to accept this system of blasting, they have rapidly come to appreciate its advantages and, I do not think I am exaggerating, when I say that our men now prefer it to the other method of blasting. It is my firm belief that while the first cost of the Cardox method is more expensive than powder, our own experience has warranted its continued use in that we have increased our sales realization as a result through the improvement of the quality of our coal.

* Vice President West Virginia Coal Company of Missouri.

Maintenance of Mining Machinery and Other Underground Equipment

by E. J. Newbaker*

IMPROPER maintenance of machinery installed in mines to reduce production costs will defeat the purpose for which the machinery was installed, as every operating machine or piece of equipment is coordinated with other productive elements so that failure of any unit may be reflected throughout the mine. The actual cost of repairing a machine and putting it into operating condition may be only a minor portion of the expense when a machine breaks down, because the delays that result in making the change-over certainly affect costs adversely even if spare machines are kept on hand to replace units that are out of service.

The proper maintenance of equipment then, involves more than mere repairs. Assuming that the equipment is suitable for the work and is properly operated, service given the machine to assure continued usefulness is of the utmost importance. This service must include adequate inspection.

The importance of inspection to eliminate major repairs and the failure of equipment while it is in operation is stressed, but it must be remembered that the actual reconditioning and repairing of machinery must be handled systematically, with adequate control, or the cost of maintenance will be excessive.

The maintenance program of The Berwind-White Coal Mining Company is based on these premises. In Pennsylvania this company operates mines in the thin seams of the Central District and in the Pittsburgh Seam in the Western District, and while conditions may be such that the methods and procedure of The Berwind-White Coal Mining Company might not be applicable in detail, it is believed that the principles can be profitably applied to any mine. This paper is descriptive of methods employed at the Central District operations.

As the area at present under operation in this district covers 50 square miles of territory from drift mouths or shaft bottoms to mine faces, it will be appreciated that no small problem is involved in the maintenance of machinery and other underground equipment.

Illustrative of the amount of equipment required are the following items: about 1,000 heavy and light type mining machines; 108 electric locomotives, the major size being 38 tons on six wheels;

1,000 room hoists; 250 miles of mine track; 120 miles of compressed air transmission piping, etc.

To properly repair and maintain this equipment about 6,000 repair parts and other items are kept in stock at the central supply store, so it is evident that if the control of this material supply were inadequate, a tremendous loss would result. The control of this phase of the maintenance work is through the mine requisition book which is designed so that the ordering of supplies can be easily supervised by responsible officials and to make a continuous record available for comparative study. Besides serving as a record book and an order book, the requisition book is a condensed catalog of standard supply items. Printed on the horizontal lines of each page are the classified parts or items for every type or make of machine, with some of the horizontal lines left blank for writing in unusual or new items that might be required. There are two vertical columns adjacent to the parts column for the manufacturer's catalog number and a blue print or reference number that may be required in ordering the item. In addition to these columns there are 12 other columns, one for each month of the year, in which the party requiring material writes the number of units that will be required for a given month. There is also a column showing the average number of items that were required per month during the preceding year, from which an immediate comparison can be made with each month of the current year so that any order for more than usual requirements can be easily checked and questioned if necessary.

A similar book is kept at the central supply store in which the combined data of all the mines is compiled, making it relatively easy for the supply store to keep an adequate stock of required material on hand without the investment in stock being excessive.

As there are several classes of maintenance men, such as electricians, wiremen, motor barnmen, foremen, etc., at each mine, the system provides a different colored pencil for each class which designates the individual to whom the material is to be delivered. When all the parties at a mine have marked in the order book their requirements for the coming month, it is sent to the division superintendent for his approval, after which the division clerks make up re-

quisitions on the supply store for the required material. All the material required by an individual is put on one requisition and a carbon copy of the requisition is sent back to him for use in checking the material when it is received. If the supply store has to get material to fill a requisition through the purchasing department, such items can be typed direct from the division superintendent's requisition to the supply store requisition on the purchasing department and these requisitions must be scrutinized and approved by the head of the interested department, such as the electrical or engineering department before the requisition goes to the general manager for approval.

While this system of controlling supplies may appear complicated, in practice it is simple and has certainly effected economies.

The responsibility for the proper maintenance of all mining machinery rests jointly on the superintendent of mines and the superintendent of the electrical department. The line of authority of the superintendent of mines is through the division superintendent and mine foreman to the mine staff, while the superintendent of the electrical department works through his own staff. The advisability of dividing this responsibility might be questioned in some organizations, but it has worked successfully for The Berwind-White Coal Mining Company, as every department recognizes the importance of the other departments, and when questionable problems arise, a short conference between the departments involved usually establishes the proper procedure.

Other equipment used underground is maintained by the operating department through the same channels with the cooperation and assistance of other departments best adapted to assist or advise as to methods. An example of this is in the maintenance of mine cars, for which the mechanical engineer assumes a large part of the responsibility. Other examples are in the extension and maintenance of the haulage system and the compressed air transmission system. The track extension and maintenance work is done by the trackmen at each mine under the supervision of the superintendent of mines through the division superintendent and mine foremen. The size rail, kind and size of accessories are standardized for all headings throughout each mine, which standards are included

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in the book of regulations and safety rules. The governing standards were developed jointly by the operating and engineering departments to suit the specific requirements of each mine. The tracks are under the constant inspection of the mine officials, superintendents and engineers.

What has been said of the trackwork also applies to the compressed air transmission system. However, the piping of the air system is periodically tested by the electrical department to determine the leakage of the system. If it should become evident that an undue amount of compressed air is being lost by leakage at some point overlooked by the operating department, it is called to the attention of the proper officials and the trouble corrected.

Each mine has from 800 to 1,200 mine cars which require two men to keep in good repair. While the cars at different mines may differ in detail, many parts are common to all and are carried in stock at the central supply store. Parts that are not standard are carried in stock at each mine. These latter supplies are stored so that they can be readily inventoried and shortage avoided without carrying an extensive stock. The car repair shop at each mine has sufficient equipment to make all the usual repairs and besides the two repairmen at these shops the mechanical engineer has two mechanics on his staff for the recovery of parts of badly damaged cars. These two mechanics also supervise the periodical lubricating of cars which is such an essential part of their maintenance. Cars that are badly damaged or lost are immediately replaced with new cars. The maintenance cost of mine cars has been a relatively small item and reflects the extreme care exercised in the designing of the cars.

The maintenance men at each mine, other than the car repairmen already mentioned, are classified as follows: Motor-barn men, mine electricians and wiremen, trackmen, and pipemen.

All locomotives, when not in service, are stored in motor barns which are adequately provided with repair facilities for motor-barnmen to make all repairs. The motor-barnmen have no other duties outside of repairing and lubricating locomotives. The responsibility for the latter is placed on the maintenance men rather than the operators.

Every locomotive is inspected quarterly by a competent locomotive inspector from the electrical department who makes out a report in duplicate of his findings and recommendations for each locomotive on a form provided for the purpose. The duplicate inspection reports are given to the division superintendent. When the

recommendations thereon have been complied with, he returns one copy of each report to the electrical department with the notation that suggested repairs have been made.

Trolley wire in the mines is put up, kept in repair, and removed by the mine wireman under the supervision of the mine foreman. Five hundred thousand C. M. cable is used for direct-current feeder lines inside mines along the main headings and other haulageways where required. Two cables are used in parallel where necessary. Underground feeder lines are under the supervision of the electrical department and are advanced each year as the haulage advances. The electrical department also does all bonding.

more time than the mine worked; this established the standard section.

All underground machinery supplies at the mines are in the keeping of the head electrician and are dispensed by him, as he is held responsible for such supplies.

The head electrician at the mine under the supervision of the division superintendent and the mine foreman directs and assists the electricians, inspects their equipment and work, and secures supplies for them.

Mines that are conveyORIZED have two electricians for every five room conveyors. They lubricate the conveyors every working shift and the shortwall chain machines, fans, and car pullers at regular intervals. These electricians make all the repairs which can or must be

Requisition for Mine Supplies, Eureka No. —, Year 19—

THE BERWIND-WHITE COAL MINING COMPANY		EUREKA No. —, Year 19—	
MINE INSPECTION REPORT		MINE SUPPLIES REQUISITION	
Eureka No. —	Inspector's Name —	Item No.	Description
Location —	Date of Inspection —	14543	Chain Coal Support
Motor Make and Number —	Motor Make and Number —	42939	Right Hand Side Support
Motor Bearing Type and Condition —	Motor Bearing Type and Condition —	40514	Tying Steel Cable
Controller Make and Type —	Controller Make and Type —	15627	Plank (Shut of Tying Steel)
Revolving Make and Type —	Revolving Make and Type —	15629	Shackle (Round to 42939)
Switch —	Switch —	15638	Nut for Adjusting Screw
Light —	Light —	42939	Adjusting Screw
Drum —	Drum —	40146	Repe Code for Underframe
Conveyor —	Conveyor —	14011	1/4" x 3" Pipe Bolt for 40146
Chain —	Chain —		Shading
Brake —	Brake —		
Roller —	Roller —		
Support —	Support —		
Wagon —	Wagon —		
Locomotive —	Locomotive —		
Engine —	Engine —		
Boiler —	Boiler —		
Smokestack —	Smokestack —		
Water Tank —	Water Tank —		
Coal Bin —	Coal Bin —		
Coal Chute —	Coal Chute —		
Coal Elevator —	Coal Elevator —		
Coal Conveyor —	Coal Conveyor —		
Coal Hoist —	Coal Hoist —		
Coal Wagon —	Coal Wagon —		
Coal Cart —	Coal Cart —		
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ALLOY STEELS IN EUROPEAN MINING EQUIPMENT

IN AN exhaustive article appearing in the *Revue du Nickel* for April, 1933, Leon Fontaine presents a number of specific instances from French mining practice of additional safety, reduction of weight, increased wear resistance, and greater protection from corrosion obtained by the use of nickel and nickel alloys in the construction of mining equipment.

A number of breakages of cage couplings led to an investigation by the Mine Service of the Central Committee of French Collieries, which showed the inefficiency and danger of the commonly applied periodic heat treatments required by the French mining laws for maintaining low carbon steel couplings in good condition. The committee, therefore, has advised that the use of these steels be abandoned, and has recommended the use of alloy steels. Their conclusions follow:

"To obtain the safest conditions with rigid and semi-rigid couplings without using too great dimensions, it is advantageous to use materials of higher elastic limit than that of the soft carb on steel. While the low or medium carbon steels, quenched and drawn, could be used, it seems preferable to use nickel steels for these reasons:

1. For the same ultimate strength these have a higher toughness and elastic limit than the carbon steels.

2. The presence of nickel reduces grain growth during the heating; the heat treatment, therefore, need be less elaborate, and minor heat treating mistakes are of less importance.

3. Addition of chromium to the nickel steel by favoring depth hardening in quenching of heavy pieces, gives greater regularity in the mechanical characteristics of the finished products."

Even for flexible chain couplings nickel steels offer an excellent solution to the problem, and chains of cast nickel steel are readily available. A number of manufacturers have cage couplings of high strength nickel chromium steel already in use with entirely satisfactory results. The Mines de la Loire and Mines de Bruay use a low carbon 2 percent nickel steel. Les Mines de Blanzy use for various coupling pieces, suspension bars, pins and nuts a nickel chromium steel with the following properties:

Ultimate strength	99,500 to 114,000 lbs./sq.in.
Elastic limit	71,000 to 85,000 lbs./sq.in.
Elongation	15 to 18% in 2"

The use of nickel chromium steels for the cage couplings, besides increasing safety, has markedly reduced weight. In one case a coupling weighing 2,150 pounds was reduced in weight to 1,225 pounds by substituting nickel steel, and the factor of safety was increased more than 50 percent.

Up to the present time little consideration has been given to the employment of nickel alloy steels in the construction of mine cars to decrease weight, but they have been used quite extensively as a means of increasing strength, particularly in car axles. The axles formerly used for this purpose were made of plain carbon steel which, when exposed to violent shocks, were often bent or broken. Attempts were made to repair such shafts at the mine, but were not successful, and all kinds of trouble resulted from car breakdowns, derailments, etc. At one of the large French coal mines, the change-over from plain carbon steel to 3½ percent nickel steel (approximately S.A.E. 2,330) in the car axles was made seven years ago, and, as a result, the number of bent or broken axles has fallen from 130 to 150 per thousand annually, to only 1 or 2 per thousand. The properties developed by the nickel steel used for the axles are as follows:

Ultimate strength	156,500 lbs./sq.in.
Elastic limit	128,000 lbs./sq.in.
Elongation	7 percent
Mesnager resiliency	9 ft.lbs./sq.in.

This steel is easily heat treated (a simple water quench, without draw) and possesses high strength, with good toughness and remarkable resistance to vibration and repeated shock. One of the most important collieries of the Pas de Calais is using, at present, about 25,000 axles of this nickel steel with gratifying results.

In the iron mines of d'Homecourt they have found it advantageous to use a 2 percent nickel steel for mine car axles. In other operations, car axles are made of a semi-hard nickel steel containing .30 percent carbon, 2 to 2.25 percent nickel, and .50 to .70 percent chromium, with average properties as follows:

Ultimate strength	100,000 lbs./sq.in.
Elastic limit	64,000 lbs./sq.in.
Elongation	22 percent

For increasing safety, nickel or nickel chromium steels are highly desirable for car couplings and coupling hooks for cables in incline shafts. The importance

of freedom from unexpected breakage of couplings in horizontal and inclined haulage ways needs no emphasis, and the replacing of mild steels with a more resistant material is in many cases a necessity.

There are three main causes of breakage in the coupling. There may be a clean break from simple shock when the metal is too brittle. Breakage may result from progressive fracture from repeated shocks, or finally, from wear at contact of the link. To avoid them all, it is best to use a steel of high elastic limit with good impact resistance. Other solutions could be considered, according to the heat treatment that might be used, with steels of the following composition and characteristics at either extreme:

1. .25/.30% carbon, 3% nickel steel	
Annealed at 1575° F. after casting, and cooling in air.	
PROPERTIES	
Ultimate strength	85,500 lbs./sq.in.
Elastic limit	54,000 lbs./sq.in.
Elongation	20 percent
Mesnager resiliency	11 ft.lbs./sq.in.
2. .25/.30% carbon, 2.5% nickel, .80% chromium steel.	
Quenched in oil at 1525° F.; drawn at about 1100° F.	
PROPERTIES	
Ultimate strength	121,000 lbs./sq.in.
Elastic limit	99,500 lbs./sq.in.
Elongation	15 percent
Mesnager resiliency	13.5 ft.lbs./sq.in.

The 3½ percent nickel steel can be used even when subjected to heavy shocks, although it has a resiliency somewhat less than the limits given above, due to its higher elastic limit.

The Use of Rock-dust

(Continued from page 22)

of our coal comes from mines which make any pretense of using rock-dust.

During the calendar year 1933 only one major explosion disaster with death of seven persons occurred in the coal mines of the United States, which is by far the best record as to major explosions in the annals of coal mining in the United States; this contrasts very favorably with the record of the five-year period, 1906-10, inclusive (before the United States Bureau of Mines began to function), when there were 84 major coal-mine disasters in the United States, or an average of 17 per year, the total annual fatalities from gas and dust explosions in this five-year period being 477.6. Evidently coal-mine explosions are preventable and unquestionably rock-dusting is one of the most effective preventives.

How Can The Bureau of Mines

Most Effectively Serve Mining?

By Scott Turner
Eugene McAuliffe
P. G. Beckett
Milnor Roberts
Milton H. Fies
E. A. Holbrook
T. J. Thomas
John T. Ryan

At the December meeting of the American Mining Congress, a discussion was arranged on "What Shall the United States Bureau of Mines do for the Industry." Several papers were presented and considerable discussion resulted in the adoption of a resolution calling for the creation of a special committee to develop a program and work out a cooperative plan with the Bureau and the Industry as to just what each may do to get the best results. Mr. Eugene McAuliffe, President of the Union Pacific Coal Company, Omaha, Nebraska, has been appointed chairman of the committee, and plans for its proper functioning are rapidly getting under way.

Prior to the meeting The American Mining Congress submitted to its membership a questionnaire asking their views of the Bureau's present set-up and what they believed should be its future work. The result of that questionnaire was presented to the meeting.

THE American Mining Congress, in its effort to clarify the views of its members concerning the United States Bureau of Mines, sent out a general letter asking for comments. The results are very interesting. Operators in the Pacific Northwest, the Far West, the Middle West, the East, and the Southern districts met in different groups to discuss the situation. Many of them have passed resolutions which are to be presented to the resolutions committee of this group, and many individuals have expressed their own personal conclusions as to the value of the Bureau.

The industry from every district has been loud in its praise of the Bureau's safety work. They have insisted that this work be not curtailed in any way, that appropriations be increased therefor, and that still further effort be made by the Bureau to educate the industry to a real state of safety-mindedness.

The second endorsement of mining men generally has come through the statistical work. Operators feel that this field has been handled most adequately by the Bureau's staff, that its work should be increased, and that the staff should be augmented to the point where statistics are available even more quickly than they are now.

Many in the industry feel that the research work of the Bureau is a very real asset, and that its work along this line should not be curtailed.

These three functions of the Bureau then seem to be considered by the industry as of the greatest importance to them.

There have been numerous criticisms of the Bureau's activities and these seem to be summed up in the statement of one of the members who declared that "the Bureau should submerge its bureaucratic tendencies and should be a co-operative organization representing the operators of the country by districts and meeting with the operators to develop the projects that the Bureau should undertake." Another operator is of the opinion that the reason the Bureau has not had the cooperation from mining men is because it has not been willing to get out in front and lead, and has been inclined to stand behind and use the whip.

The general view of the members of The American Mining Congress is that the industry should get behind the Bureau of Mines; that it should eliminate its critical attitude in regard to the Bureau; that it should seek real committees that will work with the Bureau in the matter of appropriations and the work that is to be undertaken; that the Director of the Bureau of Mines shall have a sufficient appropriation that he can afford to travel extensively through the various mining districts, meeting at

least twice each year with the operators in each of the districts for a discussion of their problems as they relate to assistance from the Bureau.

The members advocate the setting up of a great cooperative committee which shall work through The American Mining Congress and have as one of its members the secretary of that organization; that a representative mining operator from each of the mineral producing districts or states shall be elected by the operators in the district to formulate a committee to cooperate with Secretary Ickes, under whose directorship the Bureau will function, and with the Director of the Bureau of Mines, and thus consolidate and coordinate all of the best features of the Bureau, eliminating those things which seem inimical to the industry and which are causing a lack of cooperation from operators.

As nearly as we can analyze the replies that have been returned to us and which represent a very fair section of the mining industry, the opinion seems to be that the Bureau should be broken down into five major sections:

1. Administration: It is suggested that this branch of the Bureau's activities be simplified and that more time be spent in the fields by the executive officers of the Bureau.

2. Experiment Stations: That this be curtailed and that instead of the present wide-flung experiment work it be concentrated in, if possible, four major experimental stations—one in the coal fields, similar to the Pittsburgh station; one in the West for the metal industry; one in the Southwest for the oil group; and one in the Southeast for the clay group. The opinion is that this would eliminate considerable expense and give the same result.

3. Safety: In practically every instance it is urged that the safety work be extended, that greater appropriations be turned over to this work, that the work be consolidated and not spread out so thinly, and that the Bureau shall act more as a leader and instructor in safety factors than as an emergency factor in times of disaster.

4. Statistics: That this work be maintained as is, that a vigorous protest should be made against any transfer of this division to any general statistical division of the government.

5. Research: It is recognized by our members that research work is highly important, that the Bureau can carry on much research work that the industry is not equipped to carry on; and therefore the general opinion seems to be that this work must not be curtailed.

The whole general sentiment of the industry is for the Bureau of Mines, for increased appropriations for its work, for a better understanding of what it is trying to do for industry, and a more cooperative spirit on the part of the operators with the Bureau. It must be remembered that the composite picture we have presented herewith as to the views of the mining field is presented to you for discussion and not as the arbitrary dictum of our membership.

I have here a number of charts which show the complete functions of the Bureau of Mines which I shall be glad to give to anyone who is interested.

The United States Bureau of Mines Today

By Scott Turner*

SOME time ago, your secretary asked me to come here on this date and describe the present situation of the Bureau of Mines. This I can do, although many of you have known, in a general way at least, for the past decade or more, about where the Bureau stood from year to year, and I find it difficult to deal with such a large subject in the short time available; only a few points, merely indicative or suggestive, can be mentioned. A complete description of the Bureau can not be presented here.

More recently, the Mining Congress wrote all its members inviting comments on the Bureau. I trust your secretary received some thoughtful suggestions, of which use may be made later. Accurate knowledge of all the circumstances and conditions involved in the operation of the Bureau can be had only through constant and intimate touch with its administration; very few men outside the Bureau know what part of the program is compulsory, what is optional, and what men, money, and tools are available for each part of the work. Those few would be in the best position to discuss the question of how well the flexible part of the program is being conceived and executed, how efficiently the money is being spent, and how effectively the personnel is employed. Even then, there would be wide differences of opinion.

I will devote a few minutes to a description of the past and present resources of the Bureau. In general, the form and structure of the Bureau is about as it has been for the past seven years, but it is in reduced circumstances, its personnel has been greatly decreased, and its status is not altogether satisfactory to those within the organization. As far as is known, no better outlook faces us for the immediate future. We have less to do with than at any time in the past 20 years, and many additional duties have been transferred to us, to be paid for out of steadily dwindling allowances, yet we are trying to carry on those services which have been continued since the time when we had more than three times as much money and greater option as to form and character of activities.

* Director, U. S. B. of M.



The magnitude and the variety of all governmental undertakings are limited by congressional appropriations. Recent annual reports of this Bureau have shown the sums available each year since the beginning in 1910. Here we might go back to the last war-year, and note the annual appropriations for the Bureau of Mines since 1918:

1918.....	\$1,467,070.00
1919.....	1,558,897.00*
1920.....	1,216,897.00
1921.....	1,362,642.00
1922.....	1,474,300.00
1923.....	1,580,900.00
1924.....	1,784,959.00
1925.....	2,028,268.00
1926.....	1,875,010.00
1927.....	1,514,400.00
1928.....	3,025,150.00
1929.....	3,444,594.67
1930.....	2,394,886.38
1931.....	2,847,414.19
1932.....	2,438,345.70
1933.....	1,860,325.00
1934.....	1,514,300.00
(1934 allotted by Secretary..	1,100,000.00)

* Without \$1,586,388 for Government fuel yards.

The average for the five years 1928 to 1932, inclusive, was \$2,830,078. The congressional appropriation for 1934 (\$1,514,300) was 53 percent of this, but the Department of Commerce withheld \$414,300, a reduction of 27.3 percent below the sum allotted by the Congress, leaving the Bureau \$1,100,000 for 1934, or only 39 percent of the 1928-32 yearly average.

Appropriations for 1932 were about the same as the five-year average through 1932, but during the year last ended (1933) the sum allotted the Bureau was the lowest in 17 years. However, comparing the low for 1933 (\$1,860,325) with the sum allotted to the Bureau by the Department of Commerce for 1934 (\$1,100,000), it is seen that over night (June 30 to July 1, 1933) the Bureau had to reduce its scale of operations by \$760,325, a vertical cut of 41 percent.

Although all Bureau employees are now suffering a 15-day-without-pay penalty in addition to the 15 percent salary cut, and 30 percent of the personnel was discharged on July 15, it may still be dif-

ficult for the Bureau to come within the allotment designated by the secretary.

The maximum appropriation to the Bureau was in 1929, and was \$3,444,594.67, as compared to which the departmental allowance for 1934 is 31.93 percent. Funds available for the year July 1, 1933-June 30, 1934 are less than at any time since 1917.

Taking the 1929 appropriation as the index 100, the appropriations for subsequent other years, and the Department allotment, would be as follows:

1929.....	100.00
1930.....	69.52
1931.....	82.66
1932.....	70.78
1933.....	54.01
1934.....	43.96
(Appropriated by Congress)	
1934.....	31.93
(Allotment by Secretary)	

These figures show the present financial plight of the Bureau, which seems likely to continue. While the Budget for next year has been discussed, still no comments regarding it can be made until the budgetary message goes to the Congress next January.

As stated, in our Bureau, along with a 15 percent salary cut, 15 days enforced leave without pay are required due to departmental impounding of \$414,300 appropriated for us by the Congress. Because this year we have \$760,325 less than last year's appropriation, Bureau activities were correspondingly curtailed, by about 40 percent. In July, nearly 200 employees had to be dismissed at one time. Whereas on March 1, 1933, there were 280 full-time employees in the District (mostly statistical), and 475 in the field—a total of 755, on December 1, 1933 there were 167 District and 334 field—a total of 501. The difference is 254, a loss of one-third of the regularly-employed permanent personnel, at a time when demands for our services were greater than ever. Supplies and equipment had to come from already-depleted inventories; there is a very small amount available for travel; allotment for publications last year was about half that of the year before, and this year less than a third.

To meet these drastic reductions, 9 of the 11 mine-rescue cars have had to be decommissioned, and now are stored on sidings. Field offices at Laramie, Wyo.; Shreveport, La.; Phoenix, Ariz.; Evansville, Ind.; and Kansas City, Mo., were closed. The work of the health division was abolished, and we were forced to ask the Public Health Service to take back such officers in its own pay as had been assigned to us, while those on the Bureau pay roll had to be discharged; this was a hard blow, since for 12 years cooperation between the Bureau of Mines and the Public Health Service had been close, cordial, and effective, with the result that the mining industry has available many useful and practical facts and suggestions as to the health of workmen. I doubt whether there was any better example of close coordination in the work of two separate Federal agencies.

All studies of falls of roof and coal were dropped; research work in explosives has been recessed; the study of mechanical equipment for underground use was stopped. Various statistical canvasses have been discontinued, and others

minimized. The helium division was consolidated with petroleum, and their activities were reduced. While normally the Bureau trains more than 100,000 persons each year in first-aid, mine-rescue, and accident-prevention, this dropped to 73,000 last year, and will be forced down to about 40,000 this year. All Bureau services have been greatly curtailed. Government fuel yards, for years operated by the Bureau of Mines, in close cooperation with the coal and the fuels divisions, has been transferred to the Treasury Department; since this was operated from a revolving fund, it has no effect on our appropriations.

While work has been dropped because of discharge of personnel, many of our staff are now occupied with other agencies of Government, so the Bureau has lost their services while still paying their salaries. For instance, four of our men are now in Puerto Rico, on request of the insular governor; two have been on Grand Coulee dam-site for Public Works; a man is now assigned to Public Health because of Civil Works activities; three are being used by the Petroleum Administrative Board, and many more are giving time to other emergency organizations.

I had originally intended to outline to you the Bureau's program under each of its branches and divisions; to show what part was fixed or inflexible because of Government needs, and what portion was subject to choice; to list recent accomplishments, and discuss future plans (insofar as they can be made); but I have already over-stayed my time, and, with your permission, I will make this part of my review available to you later—perhaps through the columns of THE MINING CONGRESS JOURNAL.

We welcome opportunities to keep in touch with you, and are grateful for your sympathetic attention to various problems that confront the Bureau. Like many of you, we are having a difficult time, but we are not discouraged and shall try to carry on essential services and activities, though on a reduced scale. We hope you realize some of the difficulties under which we are operating, and that you will make corresponding allowances for our seeming shortcomings.

In case you want to visit the Bureau while you are in Washington, our reference library will be found on the top floor of the Commerce building, and our rock laboratory in the basement; our publications, our information division, and the accident-statistics group are at the top of the Navy building near the Lincoln Memorial; some of our petroleum-statistics employees are in the Interior building, although our principal statistical groups will soon be found in the McGill building on G Street; at the moment, the administrative offices are at the corner of 9th and F Streets. Other portions of the Bureau are on trucks, but doubtless will be unloaded shortly, somewhere within the District.

Every group of earnest workers in Government-employ needs certain things to function effectively. Chief among these are frequent contacts with, and sympathetic consideration and support by, the administration, the industry, organizations such as yours, and by individuals. With this sort of backing, the

RESOLUTION ADOPTED BY THE AMERICAN MINING CONGRESS, DECEMBER 13-16, 1933

"The mining industry of the United States occupies a position second to that of agriculture. Its annual contribution to the wealth of the nation approximates six billion dollars. Fifty percent of the freight tonnage and 75 percent of the gross freight revenue of the railroads is received from the nation's mineral industry. The successful conduct of the mining industry is vitally necessary to the success of all business, manufacturing in particular.

"The United States Bureau of Mines was created at the urgent request of the mining industry of the nation. The American Mining Congress, now in session in the city of Washington, made up of every branch of the mining industry, was one of the leading influences in the creation of the Bureau which has been in active operation since 1910.

"During the past year the attention of the mining industry has been called in many ways to the apparent lack of support accorded the Bureau, resulting in the curtailment of activities vitally important to the industry, and the men employed therein. This situation is evidenced in many ways; as, for example, the work of collecting special statistics relating to the coal industry has been absorbed by the National Recovery Administration, and the statistics relating to the petroleum industry has similarly been transferred to the Petroleum Regulatory Commission, both of which bodies were constituted to meet an emergency situation. The work of making the lives of mine employees safer has also been curtailed by reason of the Bureau's lack of financial support.

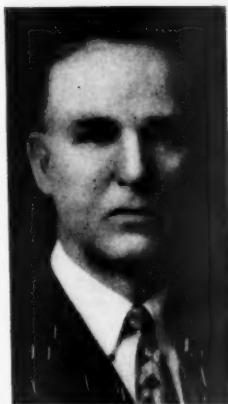
"Our attention has also been called to the fact that the working staff of the Bureau is now occupying diverse scattered locations throughout the city of Washington, reducing most seriously the effective efficiency of the Bureau.

"We further understand that at the request of the Honorable Secretary of the Interior, an investigation of the activities of the Bureau has been initiated by a committee largely composed of scientists, to the exclusion of the men who own and operate the mining properties, and who are responsible for the labor employed therein. It is the feeling of the American Mining Congress that the men who operate the mines should be given the fullest opportunity to study the work of the Bureau, making suitable recommendations as to its future activities.

"For the reasons outlined above, the American Mining Congress respectfully requests that any further changes in the activities of the Bureau of Mines be withheld, and that a committee appointed by the American Mining Congress be given an early and sufficient opportunity to present its views as to the value of, and the future activities of the Bureau of Mines, to the Honorable Secretary of the Interior, into which department of the Government, we have been given to understand, it is to be formally transferred."

Bureau should be able to operate to your satisfaction, and could carry on through these difficult times.

The Importance of the United States Bureau of Mines to the Coal Mining Industry



by Eugene McAuliffe*

SINCE its inception, I have felt definitely committed to the support of the U. S. Bureau of Mines. No man who enjoyed the privilege of an acquaintance with Dr. Holmes could feel otherwise than that the foundations established by him would prove an adequate support for the superstructure.

The Bureau's first real service to the coal mining industry was that of developing an intelligent method for conducting mine rescue work, something very necessary in the light of the numerous mine explosions then occurring, with fatalities running into the hundreds. The Bureau undertook to develop a technique, including definite knowledge regarding the explosive qualities of mine gases, the conditions that admit of the accumulation of explosive and deleterious gases, and the theory of preventing their accumulation, and the handling of same when allowed to accumulate.

The Bureau of Mines not only developed this technique but drew upon the technical knowledge of Great Britain and Continental Europe for the purpose of strengthening the Bureau's conclusions. The development of dependable mine rescue apparatus presented a further opportunity for usefulness on the part of the Bureau. No man who has not suffered the unfortunate experience of contending with a major coal mine disaster can fully appreciate the value of the U. S. Bureau of Mines and its capable and loyal corps of technicians.

Coincident with the mine rescue work just mentioned, the Bureau undertook the task of eliminating mine explosions, stressing adequate ventilation methods, the undercutting of coal, the use of permissible explosives and safety lights. Other and equally useful activities, including much necessary research work, was initiated, the technological side of the task receiving marked attention. The fact that the Bureau has been able to bring the work done in the British and

European mines to this country added much to the sum of knowledge possessed by American mining men. An equal contribution has been made to foreign practice, the Bureau's field expanded to include not only Great Britain and Europe, but Africa, Asia and Australia. This exchange of knowledge and technique has been expanded under each successive director, Dr. Holmes, Dr. Manning, Dr. Bain, and the Bureau's present most capable head, Dr. Scott Turner.

Until the Bureau undertook the work of collecting statistics relative to production, man-power, hours of work, etc., in the coal industry, bituminous and anthracite, no information of any value was obtainable other than that collected at intervals of 10 years by the U. S. Census Bureau. Figures compiled by the U. S. Bureau of Mines relative to the coal industry, including the record of accidents, have been accepted not only by the public and the coal mining industry, but by the courts, the Interstate Commerce Commission, and the various state Public Service Commissions. The fact that no man has ever attempted to seriously impugn the integrity of the Bureau's findings of whatever character, speaks volumes for this most valuable governmental bureau.

We are now on the threshold of a new dispensation. After floundering in a morass of controversial uncertainty for more than a half century, the Government has apparently made up its mind to attempt at least, to place the mining industry on some stable basis whereby the interests of the capital invested, the labor employed within the industry, and perhaps what is even more important, the consumer who pays the bills, will be protected. Any hindsight that may be taken by the National Recovery Administration must perforce find its position in the records of the U. S. Bureau of Mines and I have felt since the inception of the NRA that a serious mistake was made by the administration in not expanding the statistical and analytical record of facts pertaining to the coal industry within the Bureau of Mines. The very best argument for this position will be found in the fact that the administration found itself compelled to draw on the staff of the Bureau for the intelligent and impartial formulation of the new statistical structure. I have no hesitation in saying that if President Roosevelt wished to confer a lasting and permanent benefit on the coal industry, including that portion of the nation which will continue to require coal for fuel purposes, he would insist on the

concentration of all statistical information of whatever character relating to coal in the U. S. Bureau of Mines. I am constrained to take this position for the reason that the Bureau and its representatives are well known to the industry and the industry has absolute confidence in the integrity of the Bureau. Then there enters the further fact: the theory of code regulation may disappear, while the work of collecting and collating information relative to the industry must be carried on, if coal is to be maintained in a position to render the maximum service to the nation.

The Bureau of Mines and the Arizona Copper Industry

by P. G. Beckett*

UNFORTUNATELY, time has not permitted my consulting the Arizona Mining Industry as a whole on this subject, and therefore the views outlined below should not be considered as necessarily expressing the majority thought of that Industry.

In giving consideration to my remarks it should be remembered that Arizona's main mining industry is copper, and therefore many of the functions of the Bureau of Mines as at present constituted do not apply directly to this state.

Under the technologic Branch of the Bureau of Mines organization and in the Mining Division of that branch numerous pamphlets have been published summarizing operating methods and costs of the larger mining and metallurgical operations in the state. These are interesting and useful for reference. Conditions, however, change so rapidly that the data are not up to date for very long and this type of work cannot be considered as very essential.

In the Metallurgical Division of the Technologic Branch studies of Metallurgical processes are made. While it is true that this Division has developed some facts which have been of interest to the operating mines, it is seriously questioned whether it has developed to a practical conclusion much of real commercial value to the mining companies in Arizona. Some of its metallurgical work, however, has doubtless aided in making unnecessary similar test work by the mines. Most of the larger properties in the state have their own metallurgists and their own particular problem, and are inclined to do their own metallurgical testing work.

Under the Experiment Station Division of the Technologic Branch, Arizona has an experiment station at Tucson. Without having a full knowledge of the scope of work being undertaken by this station, or its cost, it is greatly doubted if its mission is justified or fulfilled.

* President, Union Pacific Coal Company.

* General Manager, Phelps-Dodge Corporation.

Apparently no great effort is made by the Bureau to advise periodically the mining industry in the state of the exact nature of the work being done at the experiment station; and as a consequence there seems to be a lack of knowledge of the functions that it is performing.

Under the Economics Branch of the Bureau of Mines mineral statistics are compiled and published which are essential for reference, and which work properly comes under a Federal agency such as the Bureau.

It is under the Health and Safety Branch of the Bureau of Mines that I feel the mines of Arizona have been given the most cooperation and received the greatest good. This work falls under the following headings:

1. General safety work and safety recommendations.
2. First-aid training.
3. Mine-rescue training.
4. Maintenance of mine rescue cars with trained crews which are available for assistance in case of emergencies and mine disasters. This is of a special value to mines without trained men and the necessary equipment.
5. Studies regarding ventilation and health conditions in mines.

In all of the above phases of safety and health work I think it is generally recognized that the Bureau of Mines has been of inestimable benefit to the mines of the state, large and small.

In the above review of Bureau of Mines work applicable to Arizona it must be recognized that the view-point taken is largely that of one of the larger operators in the state. If service other than that outlined above is given to small operators or individuals the service rendered must be measured by the yardsticks of:

- (a) Nature of the service.
- (b) Results.
- (c) Cost in relation to value of service rendered.

In conclusion, it would be my thought that a very careful and unbiased study should be made of the various types of work now being performed by the Bureau of Mines organization in different states and a serious effort made—

1. To recognize clearly what is worth while and helpful to the mining industry in these states, and what is not.
2. To strengthen and improve what is found to be useful and essential, and to eliminate any useless and wasteful work in all branches of the bureau, not only in the different states but at Washington.
3. To eliminate any experiment stations found to be unnecessary.
4. In any remaining experiment stations decided to be necessary, to so coordinate the work that there is no duplication; and to see that all work undertaken is fully justified and of real value to the industry.
5. To have complete coordination between the bureau and other Federal agencies so as to avoid duplication on similar kinds of work.
6. To keep the industry more fully in touch with the work being undertaken and its results.

How Can the Bureau of Mines Most Effectively Serve

Mining in the Pacific Northwest?

by Milnor Roberts*



THE United States Bureau of Mines since its organization less than a quarter of a century ago has been serving mining and the whole mineral industry in the Pacific Northwest so effectively that it would be difficult to indicate directions in which its service could be improved. In fact it would be easier to name services that the bureau stands ready to perform but that the public generally has not yet learned to request. However, the depression has served to make people inquire as to what assistance can be had from Federal agencies, and no doubt the assistance of the Bureau will be in greater demand in the future than it has been in the past.

The mineral industry in the Pacific Northwest is unusually broad. It includes the search for and the mining of mineral substances under most of the groups into which economic deposits are divided. The industry also includes the treatment of ores, coals and nonmetallic substances by various dressing processes. Finally we come to the processes that prepare the substances for the market, such as the smelting of ores, the refining of metals, and the manufacture of clays into ceramic products. All these steps take place in the region and the industry is a growing one.

In all the above steps the Bureau has given consistent aid through its Northwest Experiment Station and Mine Safety Station at Seattle, a substation at Moscow, Idaho, the Alaska Station at Fairbanks, mine safety cars, regional officials, and other agencies. In addressing the American Mining Congress we may assume familiarity on the part of our members with the organization and methods of the particular bureau that serves as their principal point of contact with the Federal Government. However, I will remind you that the four primary branches of the Bureau are the

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technologic, the economic, the health and safety, and the administrative branches. Each one of these branches gives direct assistance to the industry in the Pacific Northwest.

Under the technologic branch each of the seven divisions except the one devoted to helium has maintained here direct contact with the industry. The mechanical division has six subdivisions, at least half of which have been concerned in the local work. A recent illustration may be found in the testing of coal-cutting machinery for one of the largest mining companies in the region. A peculiar law recently enacted in Washington prohibits the use of electrical equipment in rooms in a gaseous mine and would have turned back the calendar to the years of all-hand work. Experts of the Bureau directed alteration of the mine equipment to the end that it could be used with safety, after which they tested it in the thorough manner for which the Bureau has established a name. Upon the completion of the Bureau's work a large group of experts gave a unanimous opinion as to the satisfactory results obtained. As a final result of the Bureau's expert advice and thorough testing, together with the confidence that the mining public has in the Bureau's findings, the group of mines is now permitted to continue in operation instead of closing, as would have occurred if the Bureau had not performed in every respect as it did.

Another recent example is afforded by the preparation of a complete set of analyses of typical coals of Washington. The advantage to the public of the report thus prepared as compared with such a report that presumably might have been prepared by some other organization, lies in the standard methods of sampling that the Bureau has devised, in the thoroughness with which it applies them, and in the exact analyses that it carries out. The publication of the above analyses in Technical Paper 491 was followed soon afterward by the issuance of Technical Paper 512 on the physical and chemical characteristics of the coals as determined by newly developed laboratory methods. A knowledge of these properties enables an exact selection of coal to be made for a particular use. These new methods of evaluating uses for the different ranks of coal are of primary importance to users of coals in all parts of the country. To mention another example, the amount of breakage that a coal suffers in mining and later handling is an important factor in the coal business. Efforts have been made to minimize this breakage but of more importance is the fact that the Bureau is studying the nature of coals with reference to their degradation in size, and has developed standardized methods for evaluating their friability.

Under the mining and metallurgical divisions assistance has been given almost continuously for many years. Studies in ore dressing have been conducted that not only answered immediate questions that were puzzling men in the local industry of each state but the studies were so fundamental that they proved to have wide interest. In the mining and preparation of nonmetallics certain investigations have been taking place steadily; the results were given to operators as fast as they were obtained and numerous papers have been issued for the benefit of a wider audience. Suggestions have been made as to the possible utilization of mineral substances that now are not in use and that are not well known to the public.

The economics branch gives such important general service to the industry that it is unnecessary here to point out particular cases of activity in a given region. The staff of the Bureau, composed as it is of men who have been educated for the industry and have grown up in it, is constantly in touch with the financial side of the business and therefore reflects in its reports the economic situations with which every operator needs to be conversant. In no sense has this branch degenerated into a mere exchange where statistics are gathered and prepared for distribution. The digestive process is as thorough as the gathering of the solid food that is the meat of the industry.

When we come to the health and safety branch it is well to turn back in our minds to the days before Federal assistance was in effect. In those days each mine kept on hand what were considered important supplies for first-aid, but the average miner had no thought of learning or practicing first-aid, and no state or other organized forms of training existed. When a fire or explosion occurred in a coal mine the state inspector of coal mines made an investigation, but for metal mines in Washington there was no one in authority. The state inspector was not provided with a large enough field staff or office force and equipment to conduct a thorough investigation into the causes underlying such accidents, and he could only report the facts as he found them.

Comparing the above conditions with those of today, we now find every mine equipped with apparatus and supplies for use in case of fires and explosions. Except at a few small mines nearly every miner is trained in the methods of first-aid and also in the use of apparatus. The Federal inspectors are men who have devoted their lives to the technical work on which they are now engaged and they owe nothing to political appointment. In times of emergency the conditions that suddenly arise are not strange to them but fit into niches in their memories along with similar conditions that they have encountered elsewhere in the course of their wide experience. In consequence these experts may be depended upon to take the best steps that it is humanly possible to expect. When the emergency has passed the local inspector presents his findings to his division chief who in turn may consult other members of his staff before drawing conclusions. The laboratory staff checks the material submitted to it and compares the figures

with many previous cases. In short, the whole machinery of country-wide strength is brought to bear on any difficult case.

The Bureau has not limited its activities in the Pacific Northwest merely to giving direct aid to the industry here but has conducted its investigations in such a scholarly manner that the results are of value to operators in other fields. The list of Bureau publications resulting from the work here is a long one. In addition there should be listed many articles published under other auspices, such as the professional societies and the technical press. The Bureau seems willing to have its material given to the public in any suitable form whenever it is unable, through shortage of funds or overcrowding of the Government presses, to publish its own reports.

Other subdivisions under the administrative branch are those that handle the production and distribution of motion pictures. These films, which are made by the Bureau alone or in cooperation with companies, are realistic and cover a careful choice of subjects. They have served to spread lessons in safety and technical knowledge as well. The fact that the film follows through a process from start to finish or shows many parts of a mine gives it a great advantage over the average film in the movies, which usually selects only the highlights and skips from place to place.

Numerous instances could be cited of assistance to operators resulting directly in a saving that was large in proportion to the operation itself. In some cases the assistance resulted from a study given to the particular problem, but at other times the Bureau, as a result of experience in other fields, was able to make valuable suggestions without an intensive study. Such a possibility can only arise with a Bureau that has had a fairly long life and a wide experience. It is hardly necessary for the Bureau itself to point out instances of this nature because the operators themselves have been only too glad to do so.

A recent occurrence in Alaska offers a good illustration of the high esteem in which the Bureau is held in our vast northern territory. From 1922 to 1926 the Bureau maintained a station in Alaska with a small corps under a supervising mining engineer. Since then the support has been greatly reduced and on July 1 of this year it was entirely withdrawn and the engineer was put on furlough. The loss of the services given by the Bureau has been felt so keenly that the Territorial Chamber of Commerce backed by 13 member organizations throughout the Northland has petitioned Director Scott Turner to reestablish a station. In a "Petition and Brief" dated Juneau, Alaska, November 4, 1933, the Board of Managers of the Alaska Territorial Chamber of Commerce, by R. S. Bragaw, President, sets forth the need of assistance. I quote two paragraphs from the brief.

In order to establish the entire mining industry of the Territory on a satisfactory basis and insure its future progress, we feel additional assistance must be given by fostering and guiding the exploration for and discovery of, new mining properties of all types; the effective and economical development of potentially productive properties, and the restoration to productivity of properties

worthy of additional development, but now idle. Mining properties of these types, and mineralized areas worthy of intensive exploration, exist in every section of Alaska and constitute the very source from which will be derived mines that must be developed if the mining industry of the Territory is to survive and prosper, to replace existing mines now productive and therefore in process of exhaustion.

Owners of most mining properties of these types, and prospectors in Alaska, are in need of the following services:

1. Competent technical advice on:
 - (a) Methods of exploration to determine the extent of their ore deposits.
 - (b) Methods and costs of underground development work.
 - (c) Approved practice in determining the tonnage and average value of the ore.
 - (d) The cheapest and safest method of mining applicable to their local conditions.
 - (e) Milling methods and equipment adaptable to their ores.
2. The preparation of factual reports from which investors or engineers representing capital can derive conclusions regarding the value of the mining properties.

Under the head of Federal Aid the petition continues as follows:

In view of the importance of increasing the gold output of the United States, and considering the position of commanding importance occupied by Alaska as a producer of gold, and especially as a potential source of future supply of gold and other essential mineral products; and also considering its preponderant interest in and control of the natural resources of the Territory. Such a service, we feel, would help to prevent wasted effort, discourage fraudulent or extravagant representations on the part of unscrupulous promoters and the sale of worthless stock, and be a large factor in guiding capital to meritorious mine developments.

We respectfully represent that the simplest, cheapest and most effective way for the Government to encourage and guide increased gold and other mining activities in Alaska, is to establish and maintain in the Territory a center of information, with an engineer in charge who will be in close touch with all gold-mine and other mining developments, and who can give advice to mine owners or operators, and to prospectors, relative to their mining problems and supply the public, the Alaska Legislature, the Governor and other officials, with authentic information concerning all mines and prospects.

It is suggested that the owners of mines and prospects should supply the proposed Alaska station with detailed information on their mining operations; a bulletin should be issued each year to describe the progress made at the active mines, and a library and file of catalogues should be maintained. The following paragraph is noteworthy as showing the success of the Bureau's previous work.

"The establishment by the Government of such a service in Alaska, as outlined herein, would not be an untried experiment. The Bureau of Mines in cooperation with the Territory maintained in Alaska during the years 1922 to 1926,

under the direction of the Supervising Mining Engineer for Alaska, a small corps of competent engineers who rendered, with much success to small mine owners and prospectors, services such as those outlined. As a result of field examinations and reports, made by these engineers, prospecting was guided and stimulated in many districts; mining practices at many properties were improved with resulting economies and increased returns, and development work was undertaken at properties that, otherwise, would have remained idle."

For this service, which the Northerners in the light of many years experience consider the most feasible that could be granted them by the Federal Government, the estimate of total cost is \$18,000 per year. The Alaska legislature in May, 1933, appropriated \$5,000 which would be applied against this estimate, leaving the demand upon the Federal appropriation at \$13,000 per year. In these days when interested groups do not hesitate to ask the Government for a few millions to aid their own industry, it is quite refreshing to see a carefully prepared request based on past experience and calculated at only \$13,000.

Even at this long distance from the capital we hear rumors that the appropriation for the Bureau of Mines may be drastically cut. Such a condition is difficult to comprehend in view of all the circumstances. If the Bureau had failed to fulfill its main objects, or had not expanded to fulfill the current demands, or if its performance had been faulty or unreliable, or again if the Bureau had seemed extravagant in its manner of performing its duties, we might find some reason for curtailing the appropriations to it. The exact opposite of such conditions more nearly describes the real situation. Even now the demands made upon the Bureau are far in excess of its capacity to serve. This condition is the result of the unnecessarily drastic reductions in the appropriations made to it in the last two years. It seems a pity that the Bureau that is concerned with so basic a producer of national wealth as mining should be expected to function with an appropriation of only one million dollars. Even the sum of two or two and a half millions formerly appropriated is not at all commensurate with the importance of the industry. In fact it looks exceedingly small when compared to the hundreds of millions appropriated for the other producer of original wealth—agriculture.

I desire to urge the American Mining Congress and all persons engaged directly or indirectly in the mining industry to rally to the support of the organization in the Federal Government that directly represents our industry. We should not be satisfied with the present service rendered by the Bureau of Mines. Instead, we should oppose further curtailment and demand the expansion of its activities and the maintenance of the present system of decentralized experiment stations. In these rapidly changing times the success of our industry depends upon a continuation and enlargement of the program of constructive research and investigation for which the Bureau of Mines is noted not only in its own country but throughout the mining world. No other program will yield such rich return to those engaged in a business that utilizes irreplaceable resources.

The Bureau and the South

by Milton H. Fies*



TO PRESENT some idea as to how the Bureau of Mines may most effectively serve mining, it is necessary that we make some resume of its past accomplishments in order to determine what, if any, changes will be of greatest service to the industry and to the nation.

There are a great many times in life when one begins to wonder whether or not Emerson, in his famous epigram about "mouse traps" and "beaten paths" and "final recognition of intrinsic worth," took into account the item of time. The intrinsic value of any movement, of any work, of any accomplishment will ultimately be recognized, of that there is no doubt, but many a man in history has gone to his end in martyrdom because the world was slow in the acknowledgment of the true excellence of his worth, and this is likewise true of institutions.

All of us, I am sure, are unanimous in one criticism of the Bureau of Mines and that is that it has been too modest. If there is any department of the Government in Washington today that is in need of a publicity agent, it is the Bureau of Mines, and, if such a press agent were established in the Bureau, I know of no one in a similar post in Washington who would have a finer field in which to display his talents.

But, the Bureau of Mines has no publicity agent, and it is my understanding that its function in the Government has been to some extent minimized and that there is a possibility of its being relegated to some subordinate position within some other Bureau. And I am here from the South—that portion of our country which has ever been the protestant throughout our nation's history—to remonstrate, in a spirit of reason and in a spirit of fairness toward the Bureau of Mines, against any such movement.

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In his book, "Looking Forward," the President of the United States makes the statement "that the achievement of good government is a long, slow task, persuading, leading, sacrificing, teaching always, because perhaps the greatest duty of statesmanship is to educate." That word "educate," as I take it, was used by him in a broad sense, and while there probably is a vast difference between the work of a coal miner, an oil driller, or an ore mucker, and the duty of a statesman, the education of the coal miner and the oil driller and the ore mucker along the right road makes easier the work of the statesman.

No man questions the fact that it is the duty of the Government to educate. As far as the South is concerned, there has been no agency of the Federal Government that has contributed as much toward the education of the mass of the workers in industry as has the Bureau of Mines. The volume of knowledge which the Bureau has carried to the citizenship of this country today has by no means been confined to that which interests the worker, nor has the benefit derived been limited to this class of our people. Its schools for superintendents and foremen, its technical research, its economic branch, mineral statistics, experimental stations and its explosives experimentation, have provided a source of knowledge for the management of interested industries which is without parallel in the history of any other similar bureau in the world.

From the standpoint of the South, the Bureau of Mines in the future can most effectively serve in that section by a continuation of the sound policies which it has pursued in the past. I do not mean to convey the impression that it cannot improve in some instances the character of its services, as I shall point out later, but the point I wish to emphasize is that fundamentally and for results achieved, the work of the Bureau during its past history has been effective and vital.

Let us consider the matter of the Bureau of Mines from a less provincial standpoint and regard its achievement in the important matter of national safety in industry. In the Safety Division alone of the U. S. Bureau of Mines, more than 755,000 (or over three-quarters of a million) men have been trained in first aid and mine rescue work, 400,000 of them having been trained in the last four years.

To June 30, of this year, 100 percent first aid certificates had been issued to 1,037 industrial plants. In the year ending June 30, 1933, 230 such certificates involved the training of 38,852 persons. During that same year 958 mining officials completed the accident prevention course, and nearly 600 others took portions of the course. Since the inception of this course, 4,411 bituminous coal mine officials have completed the full course.

During the fiscal year ending 1933, first aid instructors' certificates were issued to 625 men in Pennsylvania, 161 in

Kentucky and 108 in Alabama. First aid training given to from 70,000 to 100,000 men annually in industry has resulted in the saving of at least 200 lives annually, and many reliable industrial organizations place the ratio of the relative safety of a first aid trained man to an untrained man at from one to four to as much as from one to eight.

If I may incidentally refer to another section of the country, you have no doubt noted the splendid progress shown by the state of Pennsylvania. And, without any thought to in any way disparage the fine work of the Department of Mines for that state, I think it may safely be stated that through the cooperation of Mr. Glasgow and the Bureau of Mines the added training of workers in the state of Pennsylvania has aided in making possible the wonderful accomplishment in that state in the past few years.

Consider the accident record of the United States as compared to the larger coal producing foreign countries, such as Great Britain, France, Belgium and Prussia. Our country shows more favorably on basis of fatalities per million short tons of coal produced, but our record on basis of severity, that is, per thousand 300-day employees, is not as satisfactory as in the countries mentioned.

The unfavorable comparison on basis of severity and the favorable comparison on basis of tons produced can be explained, I think, to some extent, on the ground that we produce more coal per man, have larger seams, greater amount of machinery, etc., which condition helps our fatality record on basis of tons produced and at the same time harms our record on basis of severity, for the reason that we have fewer men employed to produce a given number of tons. We should not be satisfied with the situation as it relates to our severity record; and its improvement, with all its humane aspects, can be realized largely through the activities of a Federal agency that serves the whole country, and the Bureau of Mines is the agency to bring this about.

It is not my purpose to narrow this discussion to mining. The Bureau of Mines might well be termed a "Bureau of Industry," because it has not confined its efforts to mining alone, but, throughout the nation, wherever and whenever called upon, it has given of itself freely, for all types of industry, whether it be refineries, cement plants, steel mills or other types of manufacturing plants, particularly as to safety.

But, to get back to the South. Consider the results obtained along safety lines in the states of Alabama, Florida, Tennessee, Louisiana, Georgia, Mississippi and North and South Carolina, wherein the activities of the Bureau have been marked by splendid achievement.

In Georgia, Alabama and Tennessee, alone, for the year 1922, the estimated cost of accidents in coal mines was \$1,060,000, or 4½ cents per ton of coal produced. In 1932, the cost was \$135,000, or, roughly, 1.2 cents per ton. From July 1, 1910, to June 30, 1933, in Alabama there were 43,351 trained in first aid and rescue, and in that same period in the three states mentioned, including Alabama, there were 70,988 trained in first aid, 4,301 in mine rescue, or a grand total of, roughly, 75,000. In these same states, from 1930 to 1933, inclusive, there were 130 plants that made it compulsory for 100 percent of their employees to be

trained in first aid. From the year 1931, to date, the Bureau of Mines has trained in these Southern States, as instructors—men qualified to help others—a total of 501.

The average number of fatalities in Alabama coal mines from 1922 to 1926, inclusive, was 129, with 170,000 tons produced per fatality; 1927 to 1931, inclusive, there were 64 fatalities per year with average production of coal per fatality at approximately 291,000 tons; whereas, in the year 1932, there were only 18 fatalities with production of 472,000 tons per fatality.

Assuming the cost of a fatality to be \$5,000, first aid training effects a saving of \$1,000,000 annually to mining companies. In Alabama, for the period 1922-1926 on this basis the annual average cost of coal mine fatalities was \$645,000; for the period 1927-1931, the cost was \$320,000, and in 1932, \$90,000. The efforts of the Bureau in cooperation with the State Mining Department and the Alabama Mining Institute were largely responsible for this annual saving of \$325,000 in the first two periods mentioned.

Recent Bureau of Mines statistics indicate that one person in every six engaged in mining is injured every year. Therefore, about 16,500 of the 100,000 persons trained in first aid each year should receive an injury. If training reduces accidents 35 percent, which we would judge to be a conservative estimate from the ratios given above, the annual reduction would be 5,600, due to the Bureau's first aid training. Assuming a cost of \$100 per accident, the saving is about \$560,000. In Alabama, in 1932, it may have been expected that 3,500 persons would be injured and the average cost would be \$350,000. If 35 percent of the 5,836 persons trained in first aid were prevented from receiving an injury, then the reduction for 1932 would be 2,042 less injuries and at \$100 per accident the estimated saving is \$204,200. First aid training was then responsible for this saving in Alabama alone.

The savings in money and misery accrue, not only to mine employees but to the mining industry and to the general public through first aid rendered by Bureau-trained men.

The economic saving and the acci-

dents prevented through the instruction in accident prevention, through the safety inspections and reports, through the special investigations and through the analysis of mine air, dust and coal samples, cannot be estimated but the cooperation of the Bureau of Mines with the states, mining societies and institutes, and the individual companies, has aided materially in reducing cost of accidents and mining. The value of organized safety, such as advocated by the Holmes Safety Association, has been widely acknowledged, though the cost has not been evaluated to show the saving to the industry.

The work of the Holmes Safety Association in the South has been of special interest, particularly in the rural sections at isolated mines and it has, moreover, been of unusual value to the negro miner. It will be interesting to you who come from other sections of the country to know that the negro Holmes chapters, held separately of course from the white chapters, are looked upon by the negro in somewhat the same manner as he looks upon his lodge. They take the work seriously and it has been of great educational worth to them.

I do not mean to depreciate the contribution of the Holmes Safety Association to our native white miners in the South, but it has been an interesting study, as far as race psychology goes, to us who are interested in the negro, to observe his attitude.

There is one company attentive to its safety record, that has made a comparative study of accidents to negroes and whites. At its mines, at which about 35 percent of the total number of employees are negroes with about 50 percent of the face workers negroes, for the years 1931, 1932 and through November, 1933, the following record is interesting:

	White	Negro
Employees	65%	35%
Disabling injuries	73%	27%
Compensable injuries	76%	24%
Non-compensable injuries	69%	31%
Days lost	81%	19%
Cost of compensation	83%	17%

The safety bulletins issued by the Bureau have been instructive not only from a safety standpoint but, rather, informative generally. Many of our underprivileged men have been able to learn

COMPARISON OF ALABAMA FATALITY RATES WITH THAT OF THE UNITED STATES AS A WHOLE, 1911 TO 1932, INCLUSIVE

Year	Number Killed		Deaths per Million Tons		Tons Per Fatality	
	Ala.	U.S.	Ala.	U.S.	Ala.	U.S.
1911	209	2,656	13.92	5.35	71,827	186,887
1912	121	2,419	7.35	4.53	136,471	220,945
1913	124	2,785	6.92	4.89	144,413	204,535
1914	137	2,454	8.82	4.75	123,222	209,261
1915	63	2,269	4.13	4.27	242,331	234,297
1916	118	2,226	6.47	3.77	154,531	265,094
1917	109	2,696	5.34	4.14	187,298	241,618
1918	110	2,580	5.63	3.80	177,473	262,873
1919	93	2,323	5.83	4.19	171,277	238,464
1920	78	2,272	4.48	3.45	222,967	289,729
1921	80	1,995	6.14	3.94	162,668	253,832
1922	183	1,984	9.76	4.16	102,501	240,399
1923	89	2,462	4.25	3.74	235,014	267,223
1924	77	2,402	3.92	4.20	254,752	237,974
1925	162	2,234	7.93	3.84	125,979	260,461
1926	139	2,518	6.46	3.88	154,739	261,241
1927	93	2,231	4.66	3.73	217,106	267,978
1928	67	2,176	3.71	3.78	269,494	264,749
1929	72	2,187	3.91	3.59	255,667	278,880
1930	61	2,014	3.81	3.79	262,416	263,869
1931	26	1,430	2.15	3.27	470,000	296,000
1932	18	923	2.17	3.02	460,000	331,167
Total	2,229	49,236	127.74	88.06	4,602,146	5,577,126
Average	101	2,238	5.81	4.00	209,188	253,506

about mine gases, mine timbering and other valuable technical data which they would not have been able to acquire without the assistance of the Bureau.

It may not be amiss to state that the Holmes Safety Association work was inaugurated in Alabama in 1923 and at that time there were approximately 40 chapters organized, which, if I recall correctly, constituted a majority of all such chapters in all the states of the Union. On June 30, 1933, there were 58 chapters operating in the state.

I trust that I may be pardoned for the pride I possess in Alabama's safety achievement, and while I do not propose to bore you unduly with statistics, I think that the table showing the comparison of Alabama fatality rates with those of the United States as a whole, from 1911 to 1932, inclusive, is a matter of much interest as it relates to the Bureau of Mines, for the reason that since its inception I doubt if there is a state in the Union that has appreciated its worth to any greater extent than has the state of Alabama. Every individual therein interested in coal mining knows of the great contribution made by the Bureau in the reduction of fatalities due to gas and dust explosions in coal mines. Its research work and its method of education among the mining men of the state has been invaluable.

Consider the Bureau's accomplishment in the reduction of fatalities from dust and gas explosions, from the standpoint of Alabama again. In the 10 years, 1911-1920, there was an average of 34.3 fatalities per year from this cause; for the period 1921 to 1930, inclusive, 26 fatalities per year, and for the last three years there have been only three fatalities from this source, all in the year 1931.

Not only has the Bureau, in its study of gas and dust explosions, rendered effective aid to all interested in coal mining in America, but its efforts have contributed much toward the reduction of accidents from this source among all the nations of the earth where coal is mined.

The Experiment Station of the Bureau of Mines at the University of Alabama, Tuscaloosa, Ala., has accomplished some outstanding results in analyses and washing experimentation with reference to coal, in economic mining methods of graphite and concentration of low grade iron ores.

Practically all the coal seams in our state contain extraneous matter and the work the Bureau has done in improving washing results has been most helpful. There are enormous areas of low-grade iron ore in Alabama that some day should have a commercial value and the Bureau is working along the right line here. Its influence among the technical students at the university cannot be estimated. All this work at our State University has been done under handicaps and I have been hoping that either the university or the Bureau of Mines would apply for some Federal funds through the Public Works Administration to broaden these activities so as to at least give the work of the Bureau there a fair chance.

Here is an organization that has served the mining industry, petroleum and allied interests, and has rendered aid to all industry when called upon, at a minimum expense to the Government. The value of mine and metal products is approximately \$6,000,000,000 annually. The expense of the Bureau's operation

as compared to the annual production value of the industries it serves is, I believe, less than any other department of the Government.

Surely, those who have in mind reducing the services of the Bureau of Mines, either by reduced expenditure within the Bureau of curtailing its personnel, do not realize that never in its history has the Bureau a greater opportunity to render valuable service to industry and the nation along economic lines than at the present time. The whole set-up of the successful working out of the coal code depends largely upon the establishment of differentials in the various grades of coal based upon the quality of the many seams. These quality values must be determined by sampling and analyses of the various seams, and for this service the agency in which all coal operators have the greatest confidence is the Bureau of Mines.

We are living in an age of so-called long range planning. The disruption of the relation of production with consumption and maldistribution of products is the basis of our ills. The statistical department of the Bureau, with its experience and its compiled data as they relate to all mining, is essentially invaluable. As far as coal is concerned, there is no agency anywhere in the land that has even comparable knowledge as to market conditions, competitive fuels, distribution of fuels, and all those valuable facts which can aid in making possible our national recovery as it relates to these great basic industries and to the part which they will play in the Nation's recovery.

There can be no long range planning for the coal industry without recognition of the fact that in the chemistry of coal lies the ultimate salvation of the industry. Unless our Government is alive to the possibilities in the relationship of coal to organic chemistry, the future progress of this country may be seriously impeded. The research department of the Bureau of Mines has not only kept apace of the investigations conducted in foreign countries, where more extensive research has been carried on, but has

contributed in no small measure to research work in this country.

But, since I am to suggest the most effective manner in which the Bureau can serve mining, I would stress this point more than any other. There should be an enlargement in its activities and its policy as it relates to research in the chemistry of coal.

There is very little to criticize in the scope and general plan of the Bureau of Mines. Certainly all of us agree that fundamentally its conception of its own duties is sound. And, as stated, it needs, in my opinion, only stressing and emphasizing and enlarging the work which it has done, rather than any radical change in its policies.

Summarizing, briefly, intensive work in research, a continuation of its fine safety and health policies and the enlarging and broadening of its statistical bureau, including comparative analyses of various coals in the several fields, will be of immeasurable value to industry and through it to the nation.

It may not be amiss to state, and I think that as an engineer I may be able to make the statement without criticism, that engineers in a great many instances are faddists and, frankly, present quite a few abnormalities. In other words, many of us—to be charitable—possess certain eccentric characteristics, and I think this describes adequately engineers in and out of the Bureau, particularly out of the Bureau. And, where there has been professional difference of opinion in the past, due to such individual eccentricities, we should guard against them in the future so that we may obtain the full measure of value from the Bureau. We have been too prone to criticize unimportant details, prompted largely by personal feelings and we should be big enough to cooperate with the Bureau on the basis of its broad ideals and forget our own, and their, idiosyncrasies.

Those of us in the South who believe in the Bureau, and we are legion, stand ready now and at any time to carry on the struggle for its individual existence with all the fullness of our strength.

The Bureau and the Coal Industry

by E. A. Holbrook*

I REPRESENT and am sent here by the Coal Mining Institute of America, an organization composed of managers, superintendents, inspectors, foremen, and the operating men in the coal mining industry of this country.

I respect the Bureau of Mines and our organization respects it. I have a personal love for the Bureau, and as a member of the Coal Mining Institute and as chairman of their committee on the Bureau of Mines I most sincerely protest for that organization the effect that is being had among the industry by the thought that the United States Bureau of Mines is in danger of being made a football of politics here in Washington. You men who have not known the Bureau for many years and are members in Congress on the Hill, a new gener-

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ation who have come in since the Bureau was formed, could do well to go back to the old records of Congress and at the hearings preceding the formation of the Bureau, and you would find there that the American Mining Congress is the father of the Bureau of Mines and that John Mitchell stood there on the floor of the hearings and said, "We are lost, we don't know why we kill thousands of miners, we don't know why we have these explosions. Please give us not a Department of Labor or an organization in the Department of Labor, but please give us an independent bureau that can go ahead and find out what is the matter and prescribe remedies. And we as an organization of miners are behind it."

The first director of this Bureau of Mines was a southern Democrat appointed by a Republican President. Another one of the directors has been a Republican appointed by a Democratic

President. We have been free as a Bureau from the influence of partisan politics and we want it kept free.

We have seen the Bureau grow and develop and we are satisfied with its work. To the operating men in the coal industry the Bureau's findings have become a Bible. It does make a difference to us where the Bureau is placed. It was in the Department of the Interior to begin with and it functioned there as practically an independent bureau, and when you try to make this a bureau of geologists or a bureau purely of scientists or a bureau of the operators or a bureau of labor or of the labor movements, you ignore the fundamental reason for the being of the Bureau. It is not an affiliate or a part of any of those organizations. It belongs to the heart of the mining industry and its findings go back through the heart of the mining industry. The people who compose its personnel must continue to be technically expert and they must have reasonable freedom from these disturbing influences which I have heard of this morning with astonishment and shame.

We don't care where the Bureau is put so long as it is kept free from a movement on the right or a movement on the left. We do believe it ought to be left in a department where it can function practically independently of and for the mining industry of this country.

We have adopted resolutions favoring very strongly, of course, the continuance of this work in accident prevention with all that that means to safety, to machinery, to methods of operating, with all that it means to the men in the industry who are responsible for that sort of thing.

There is only one way to do it, and that way we favor, and that is for this Government now as in the past to forget politics with the Bureau of Mines; it is a field organization for the industry, wanted by the industry and made up of men in the industry.

The Bureau and Illinois Coal Industry

by T. J. Thomas*

I HAVE been delegated by the Illinois Mining Institute to represent that organization.

We are opposed to the curtailment of the activities of the Bureau of Mines. I happen to know personally, having been in contact with a number of the personnel of the Bureau, of the splendid work that that organization has undertaken to do and has done. We rely insofar as our company is concerned, and I am sure that that is true with practically all of the operators in the State of Illinois, on the Bureau of Mines, and when we are seeking technical information or statistical information relating to the mining industry, the first place we go is to the United States Bureau of Mines. I personally have a good deal of regard for the men who are in the field doing the field work of that organization because we have had them in our mine, and the constructive criticism that they have made has been of value, I would say of much value to us and to the industry in the State of Illinois.

I would like to move the adoption of a resolution that the American Mining Congress, through its secretary, be permitted to select a small committee to indicate our views to the administration. We are not so much concerned in what department the Bureau may finally be lodged, but that we do solicit their support in continuing the activities of the Bureau in all of its ramifications and to increase it in some respects if at all possible.

I made a trip through Texas and Louisiana and Mississippi and Kentucky just about two weeks ago, and in driving over that territory we literally saw hundreds and hundreds of men along the right of way raking up leaves and burning the leaves. Now, that is all right, men

should be given an opportunity to work and I would rather see men doing that than being on the dole, but I understand that insofar as the activities and the appropriation of the United States Bureau of Mines is concerned, out of the \$1,100,000, as I get it, approximately 75 percent of that represents labor, probably five or 10 percent of it represents transportation and expenses, the other probably material, and if this Government of ours wants to do something for the industry and at the same time perpetuate an organization in which a large amount of the money goes into labor, I think we ought to get back of it and try to indicate to Mr. Ickes and the gentlemen who are at the head of our administration today that that is a work that ought to be continued, and, in fact, perpetuated.

* President, Valier Coal Company.



The Bureau as a Practical Aid to Mining

by John T. Ryan*

I DO NOT think mining people in general are familiar with the tremendous service which the Bureau rendered the Nation during the early stages of our participation in the World War and the potential value of such an organization for the future in the event of a war.

It has been apparent for some time that the mining industry as a whole has had only a passive interest in the only department of the Government service that serves their interest, and I can think of no other large industry that takes such a passive interest in the Government department serving their industry. The Bureau has potential possibilities of being of more service to the industry they are set up to serve than most any other Governmental department. If they are not properly serving their industry, then I think it is high time that the industry interests itself and sees to it that it does render the kind of service the industry wants; however, they must indicate in a constructive way what they

want and expect. The mining industry should assume the attitude that the money that is appropriated to the Bureau is their money and they should take more of an interest in how it is being spent. If the Bureau of Mines is abolished, it won't lessen the appropriations \$1.00 in my opinion. This money will just be expended by other departments and it will have no relation or value to the mining industry.

The second largest industry in our Nation certainly should be definitely represented in our Governmental set-up, particularly through a technical department as there is no industry that is more in need of research work than the mineral industry.

There is, therefore, in my opinion, no room for even arguing the question of retaining the Bureau and retaining it as a separate and distinct bureau. If the character and type of work the Bureau has been doing in the past is not satisfactory to the industry, then they should change it; and I think that can be brought about in a very simple manner,

namely, by the industry just indicating very definitely what they want. However, allowing the Bureau to be abolished or disintegrate simply through lack of interest will not accomplish anything.

You have asked for some suggestions as to the relative importance of the phases of work conducted by the Bureau in the past and being conducted at present.

The health and safety work of the Bureau in its early days was its most important activity. This phase of the work has always been carried on most effectively and with increasing value during all these years. I had a rather important position in the Safety Division for several years during the earlier period, and I never have been ashamed of the character of the work which our division did during that formative period; and it was made up of a wonderful bunch of fine courageous men who never hesitated to risk their lives when called upon, including the Director himself, Joseph A. Holmes, whom I had on my rescue crew wearing breathing apparatus on several occasions following mine explosions.

(Continued on page 54)

* Vice President, Mine Safety Appliances Co.

MINING EVENTS

Gold and Silver

SILVER and gold continue to occupy the limelight in so far as the mining industry is concerned. The President's proclamation in regard to silver purchases was the leading event of the month. The new highs established for both gold and silver gives greater assurance to the West than for many months, and extensive plans are already under way to take full advantage of the increased prices of these metals.

Formal regulations governing the purchase of approximately 24,000,000 ounces annually of newly mined domestic silver will be made public by the Treasury Department January 3, according to Secretary Morgenthau.

It is understood the regulations will be similar to those promulgated in connection with the purchase of domestic gold.

Asked if the Government would purchase as much as 60,000,000 ounces yearly, if production of the white metal should show a rapid increase in response to the rise in price, according to press reports, Mr. Morgenthau indicated that the President's proclamation directing the purchase of "at least" 24,000,000 ounces annually, would in all likelihood be modified to meet the increased production. White House officials recently indicated that the annual purchases might be five or ten million ounces more than the 24,000,000 ounces specified in the proclamation.

THE PRESIDENT'S PROCLAMATION ON SILVER

WHEREAS by Paragraph (2) of Section 43, Title III, of the Act of Congress, approved May 12, 1933 (Public No. 10), the President is authorized by proclamation to fix the weight of the gold dollar in grains nine-tenths fine and also to fix the weight of the silver dollar in grains nine-tenths fine at a definite fixed ratio in relation to the gold dollar at such amounts as he finds necessary from his investigation to stabilize domestic prices or to protect the foreign commerce against the adverse effect of depreciated foreign currencies, and to provide for the unlimited coinage of such gold and silver at the ratio so fixed; and

WHEREAS from investigations made by me, I find it necessary, in aid of the stabilization of domestic prices and in accordance with the policy and program authorized by Congress, which are now being administered, and to protect our foreign commerce against the adverse effect of depreciated foreign currencies, that the price of silver be enhanced and stabilized; and

CITES LONDON AGREEMENT

WHEREAS a resolution presented by the delegation of the United States of

America was unanimously adopted at the World Economic and Monetary Conference in London on July 20, 1933, by the representatives of 66 governments, which in substance provided that said governments will abandon the policy and practice of melting up or debasing silver coins; that low-valued silver currency be replaced with silver coins and that no legislation should be enacted that will depreciate the value of silver; and

JUST GOOD, CLEAN FUN



—Washington Post

WHEREAS a separate and supplemental agreement was entered into, at the instance of the representatives of the United States, between China, India, and Spain, the holders and users of large quantities of silver, on the one hand, and Australia, Canada, Mexico, Peru, and the United States on the other hand, as the chief producers of silver, wherein China agreed not to dispose of any silver derived from the melting up or debasement of silver coins, and India agreed not to dispose of over 35,000,000 ounces of silver per annum during a period of four years commencing January 1, 1934, and Spain agreed not to dispose of over 5,000,000 ounces of silver annually during said period, and both of said governments agreed that at the end of said period of four years they would then subject themselves to the general resolution adopted at the London conference, and in consideration of such limitation it was agreed that the governments of the five producing countries would each absorb from the mines in their respective countries a certain amount of silver, the total amount to be absorbed by said producing countries being 35,000,000 ounces per annum during the four years commencing the first day of January, 1934; that such silver so absorbed would be retained in each of said respective countries for said period

of four years, to be used for coinage purposes or as reserves for currency, or to otherwise be retained and kept off the world market during such period of time, it being understood that of the 35,000,000 ounces the United States was to absorb annually at least 24,421,410 ounces of the silver produced in the United States during such period of time.

ORDERS SILVER COINAGE

Now, therefore, finding it proper to cooperate with other governments and necessary to assist in increasing and stabilizing domestic prices, to augment the purchasing power of peoples in silver-using countries, to protect our foreign commerce against the adverse effect of depreciated foreign currencies, and to carry out the understanding between the 66 governments that adopted the resolution hereinbefore referred to; by virtue of the power in me vested by the act of Congress above cited, the other legislation designated for national recovery, and by virtue of all other authority in me vested;

I, Franklin D. Roosevelt, President of the United States of America, do proclaim and direct that each United States coinage mint shall receive for coinage into standard silver dollars any silver which such mint, subject to regulations prescribed hereunder by the Secretary of the Treasury, is satisfied has been mined, subsequently to the date of this proclamation, from natural deposits in the United States or any place subject to the jurisdiction thereof. The Director of the Mint, with the voluntary consent of the owner, shall deduct and retain of such silver so received 50 percent as seigniorage and for services performed by the Government of the United States relative to the coinage and delivery of silver dollars. The balance of such silver so received, that is, 50 percent thereof, shall be coined into standard silver dollars and the same, or an equal number of other standard silver dollars, shall be delivered to the owner or depositor of such silver. The 50 percent of such silver so deducted shall be retained as bullion by the Treasury and shall not be disposed of prior to the thirty-first day of December, 1937, except for coining into United States coins.

TREASURY TO FIX RULES

The Secretary of the Treasury is authorized to prescribe regulations to carry out the purposes of this proclamation. Such regulations shall contain provisions substantially similar to the provisions contained in the regulations made pursuant to the act of Congress, approved April 23, 1918 (40 Statutes at large, page 535), known as the Pittman Act, with such changes as he shall determine prescribing how silver mined, subsequently

to the date of this proclamation from natural deposits in the United States or any place subject to the jurisdiction thereof, shall be identified.

This proclamation shall remain in force and effect until the thirty-first day of December, 1937, unless repealed or modified by act of Congress or by subsequent proclamation. The present ratio in weight and fineness of the silver dollar to the gold dollar shall, for the purposes of this proclamation, be maintained until changed by further order or proclamation.

Notice is hereby given that I reserve the right by virtue of the authority vested in me to revoke or modify this proclamation as the interest of the United States may seem to require.

In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the city of Washington this 21st day of December, in the year of our Lord nineteen hundred and thirty-three, and of the independence of the United States of America the one hundred and fifty-eighth.

FRANKLIN D. ROOSEVELT.

By the President:

WILLIAM PHILLIPS,

Acting Secretary of State.

SILVER DEVELOPMENTS (1786 TO DATE)

(In 1786 the silver dollar was chosen by Congress of the Confederacy as the monetary unit of the United States. The piaster, or milled dollar, had been the basis of metallic circulation in the English colonies of America. The standard remained double (gold and silver) until February 12, 1873, when the gold dollar became the monetary unit.)

Act of 1786: Silver dollar of 375.64 grains pure silver established as monetary unit.

Act of April 2, 1792: Established first monetary system of U. S. *Bases*—Gold and silver dollar, or unit (371.25 grains pure silver). *Results*—Gold undervalued (ratio of gold to silver coinage was 1 to 15).

Act of June 28, 1834: *Purpose*—To remedy gold undervaluation. *Method*—Mint ratio between the metals changed to 1 to 16.002. *Result*—Silver undervalued.

Act of January 18, 1837: *Purposes*—To make fineness of gold and silver coins uniform. *Result*—Ratio changed to 1 to 15.988.

Act of February 21, 1853: Reduced weight of silver coins of denominations less than \$1. (Acts of 1792 and 1837 made weights exactly proportionate to weight of the silver dollar.) Silver coins established as legal tender to the amount of \$5.

Act of February 12, 1873: Gold dollar established as monetary unit. Authorized silver coins in form of trade dollar, half dollar, quarter and 10-cent piece, with weights specified. Silver coins made legal tender at their nominal value for any amount not exceeding \$5 in any one payment. Owners allowed to deposit silver bullion at any mint, to be formed into bars or trade dollars.

Joint Resolution of July 22, 1876 (Sec. 2): Provisions—Trade dollar not to be legal tender. Secretary of Treasury authorized to limit coinage of trade dollar to amount sufficient to meet export demands.

Act of February 28, 1878: Authorized coinage of silver dollars of 412½ grains troy, as provided in Act of January 18, 1837. Silver dollars to be legal tender at their nominal value for all debts and dues, except where otherwise stipulated in the contract. Secretary of Treasury authorized to purchase silver bullion—\$2,000,000 to \$4,000,000 worth per month—for coinage.

Act of June 9, 1879: Subsidiary silver coins made legal tender to amount of \$10, minor coins to amount of 25 cents.

Act of July 14, 1890: Provisions—Purchase of aggregate of 4,500,000 ounces silver bullion at market price, not to exceed \$1 for 371.25 grains pure silver. Issuance of Treasury notes in payment of bullion. Two million ounces of bullion to be coined into silver dollars until July 1, 1891. (Thereafter as much as needed to provide for redemption of the Treasury notes.)

Act of March 14, 1900: Gold dollar declared standard unit of value. Secretary of Treasury directed to maintain at a parity of value with the gold standard all forms of money issued or coined by the United States.

Act of May 12, 1933 (Farm Inflation Act): Permits fixing weight of silver dollar at definite fixed ratio to gold, and unlimited coinage of gold and silver; authorizes receipt of \$200,000,000 in silver on war debt payments by foreign nations.

World Economic and Monetary Conference: Resolution adopted July 20 providing governments abandon policy of melting up or debasing silver coins, etc., and U. S. entered into agreement for absorption of 35,000,000 ounces of silver annually, 24,421,410 ounces of domestic production.

President's Silver Proclamation: Issued December 21 and presented herewith.

(Compiled by Congressional Intelligence)

Copper

THE special committee appointed to prepare a new code for copper, composed of J. B. Hobbins, B. N. Zimmer, and A. E. Petermann, has resubmitted the code for discussion. There are still differences among the producers in regard to the details of this code, which is an effort to reconcile differences between producers and custom smelters, but it is anticipated that these differences will be ironed out before the public hearing which is to be held before NRA officials sometime early in January. This code provides for a minimum price, curtailment of output to 20 percent of capacity for the larger producers and somewhat higher percentages for the smaller companies, pooling of sales, preferences as to sales and manner of reducing stocks

and the prices at which stocks can be reduced.

World stocks of copper apparently increased about 8,000,000 pounds in November. North and South America contributed 1,500,000 and the rest of the world 6,500,000 pounds. However, there is some explanation which throws a different light on the copper metal situation. While stocks increased in November the fabricators both here and abroad were seeking to keep down inventories because of the near approach of the end of the year. They therefore shipped out more finished goods than the amount of copper that they had shipped in to them. It is therefore probable that the stocks of fabricators were reduced here and abroad fully as much as the refined stocks increased.

World stocks of refined copper December 1 were 1,280,000,000 pounds of which stocks in North and South America totaled 1,048,000,000 pounds.

Representative Isabella Greenway, of Arizona, recommends that the United States copper surplus be frozen to enable a higher rate of operation of the mines.

Beginning January 1, Kennecott Copper Corporation will sell its own copper, and Guggenheim Brothers have withdrawn from selling copper as of that date. Kennecott will take over the Guggenheim copper sales organization.

The Guggenheim selling agency for many years has been one of the largest sellers of copper throughout the world with an extensive organization in the United States, Great Britain, France, Germany, and elsewhere.

WORLD consumption of copper outside of North and South America has been averaging about the same per month this year as last year, according to figures compiled by the American Bureau of Metal Statistics. For the last three months reported, however, the average consumption has been below the rate earlier in the year. Average monthly output for the year thus far (10 months in some cases, 9 and 8 in others) has totaled 65,413 metric tons which compares to 65,541 tons average for the full year 1932. Canadian consumption during the first nine months of the year averaged 3,962 short tons. During the third quarter, Canadian consumption averaged 5,032 tons.

Anthracite

A most serious situation surrounds the anthracite code. It is directly tied in with the labor disputes brought about through the formation of the insurgent Anthracite Miners Union of Pennsylvania. This union, although numerically a small minority, is capable of calling a general strike at any time because of the support it receives from the large army of unemployed miners.

The problem presented by the grievances of the new union, as outlined in the report last week of the Fact-Finding Committee to the National Labor Board, is proving a riddle to the Board. To follow the recommendations of the Committee for a lengthy investigation would

mean delaying action for months. The problem has been and is being discussed by the Board from every angle. Conferences are held every day. Senator Wagner is genuinely anxious to effect an early and amicable adjustment but his task is almost superhuman. Peace in the anthracite regions involves adjustments in economic conditions so complex and deep-rooted as to be far beyond the scope either of the Labor Board or of the NRA. It is not merely a question of improving conditions of the employed miners but of giving employment to thousands of miners long out of work and who may never be needed in the mines again. And then there is involved the problems of the operators—problems concerning markets, transportation rates, competitive fuels—which bear directly upon the workers.

While the Labor Board (and all the members have been called in, including Swope, Dupont, Kirstein, Wolman, Lewis) continues its efforts to work out a solution, the NRA finds its hands full with a proposed anthracite code which it knows labor would never accept even if its own Labor Advisory Board were to give its approval. The Labor Advisory Board feels that the code as proposed does not carry out the purposes of the Recovery Act in that it does nothing to increase the purchasing power or spread employment and it sees no reason why the existing contract between the operators and the United Mine Workers should interfere with the execution of the Act. Deputy Administrator Davis has been conferring with the operators and meetings have been held recently in New York.

In the meantime, the Anthracite Miners Union is pressing for action. A convention has been called to meet in Wilkes-Barre January 2 to consider a general strike. Our conversations with Federal officials suggest that these complications may result in delaying the anthracite code for many weeks, if not months.

The codes for the retail solid fuel industry and the wholesale coal trade are nearing their final stages, with the expectation that the retailers code would be ready for the President's signature before the end of the year and the wholesalers' code shortly after.

THE report of the Fact-Finding Committee appointed by the National Labor Board to investigate conditions in the anthracite region brings out in more vivid form than has hitherto been revealed the bitter conflict being waged within the ranks of organized workers. As pointed out by the committee, the conditions in the anthracite fields have their origin way beyond the general depression. Hard coal production has dropped steadily since 1923 and unemployment has been widespread for many years. It is not difficult to understand, therefore, how an accumulating unrest would inevitably develop into a "situa-

tion." The outstanding factor in the anthracite industry, however, is that despite the thoroughness of its unionization and the existence of a long term contract with the operators, there is still no guarantee of steady employment.

Tracing the history of the recent anthracite strikes, we find the following developments (Wilkes-Barre-Scranton district):

1. Calling of "rump" convention by dissatisfied element of United Mine Workers on August 7, 1933, and organization of new union, United Anthracite Miners of Pennsylvania. Formation of locals follows.

2. Representatives of U. M. W. protest to management of Capous Colliery of Penn Anthracite Company against permitting certain employees prominent in forming new local to work in mine.

3. Mine management, fearing strike of U. M. W. workers, complies and serves notice to designated members of new local.

A TIME-HONORED PRACTICE



—Washington Post

4. New union calls strike, effective August 31, in all collieries of Penn Anthracite, following refusal of company to discuss grievance, management feeling such action contrary to contract with U. M. W. Strike lasts three to four weeks.

5. New union calls strike, effective September 25, in all collieries of Hudson Coal Company, following refusal of management to accept newly-elected check docking-boss and refusal to meet with new union to discuss matter. Strike lasts several weeks.

6. New union calls strike, effective October 19, in all collieries of Glen Alden Company, following refusal of management to grant meeting to discuss controversy.

7. New union calls special convention in Wilkes-Barre October 30.

8. General strike in all mines in District No. 1 called, effective November 6.

9. National Labor Board, after preliminary investigation, offers to establish Fact-Finding Committee to make full investigation, provided picketing is discontinued and "those who have jobs and wish to work at them are permitted to do so without interference."

10. Assured by Senator Wagner that "all striking mine workers regardless of union affiliation are to be permitted to return to their former positions," new union in convention November 12 calls off strike.

11. Complications develop over restoration of striking miners to former jobs, vacancies having been filled by former workers or new employees. Companies fear reinstatement of miners would merely shift controversy to U. M. W. which demands protection for their workers.

Thus, the situation remains as it stood following the termination of the strike, with further disturbances imminent unless the striking members of the new union (approximately 900) are reinstated. Despite the small minority represented by the new union members, however, the Fact-Finding Committee reports, "they still have the power to interrupt operations of the collieries because of the very large number of mine workers who are idle and who have been without employment for the past two years. Unemployed miners in District No. 1 are estimated at between 20,000 and 30,000. The report explains that the strikes were accomplished by mass picketing but that the overwhelming majority of the picket crowds were from the ranks of unemployed mine workers. "It is the belief," says the committee, "both of the operators and of representative citizens of both Scranton and Wilkes-Barre that if another strike call should be issued the same thing would happen and that thousands of the unemployed would force the shutting down of the mines and precipitate the same conditions of riot, turbulence and bloodshed that marked previous strikes."

Regarding the grievances which led to the formation of the new union, the committee stated that charges were brought in rather a wholesale manner against operators and against officers and mine committees of the U. M. W. but that the documentary evidence which was offered was fragmentary and inconclusive. Because of the time which would be required to hear witnesses and the acuteness of the situation the committee thought it imperative to return to Washington and present its findings for immediate consideration. An adequate investigation, it believes, would require many months and should be conducted by a body composed of representatives of operators, mine workers and an outside member. "Such a body should begin its investigation," the report concludes, "with a pledge by the interested groups by which it was constituted that its findings would be accepted, and if it should develop that there are practices on the

work. Soon after its creation, Mr. Barnes joined the National Labor Board and recently has been acting secretary of the regional labor board in Cleveland, Ohio.—*Labor*.

National Recovery Administrator Hugh S. Johnson has acted to temporarily relieve an acute competitive situation affecting bituminous coal operators in Vanderburgh and Warrick Counties in Indiana by issuing an administrative order permitting them to reduce their minimum wages to more nearly meet the scales prevailing in western Kentucky mines across the Ohio River. Operators in the two Indiana counties have been paying minimums of \$4.57½ a day for inside labor and \$4 a day for outside labor as against the \$4 for inside labor and \$3 for outside labor paid by the western Kentucky mines. Under the Administrator's order, the Indiana mines will reduce their rates to \$4.20 for inside labor and \$3.60 for outside labor.

CONFERENCES of eastern and mid-west representatives of coal producers with reference to fair minimum market prices were held in Washington early in December. The following statement of conclusions were reached:

"1. Fair minimum market prices in the consuming markets as provided in the Code must be established. It is our opinion that F. O. B. mine prices should be so established.

"2. All freight rate absorptions as such to be discontinued.

"3. Various groups and producing districts here represented agree—

"(a) Where approved marketing agencies exist to submit prices to their Code Authority on or before the 22d of each month.

"(b) Each Code Authority to submit to the Presidential member all established prices on or before the 25th of each month.

"(c) Each Marketing Agency and Code Authority to proceed at once to establish prices as provided in the Code, using as a basis for correlation Franklin County, Illinois, sixth Vein Coal, bearing in mind comparative quality and marketing experience over a long period of time, such price to be presented for approval by December 15th.

"(d) Presidential members will correlate prices as between divisions here represented and approve wherever possible in order that prices may become effective on the first of each month.

"(e) In order to take care of the temporary situation until prices may be established and approved as above agreed, prices in effect between November 1st and November 11th in each district with the increase made by Indiana effective December 1st to be established; no contracts to be made during this period."

Lead and Zinc

WORLD production of zinc in November totaled 102,349 tons compared to 107,108 tons in October and 70,405 tons in November of last year, according to American Bureau of Metal Statistics.

United States production in November averaged 3,412 tons per day compared to an average of 3,455 tons in October and 2,347 tons a year ago. The month's output totaled 32,900 tons as against 35,195 tons in October. First 11 months' production was 295,074 tons.

Production of lead during November was 43,865 tons compared to 41,803 tons in October and 28,430 tons in November of last year, according to American Bureau of Metal Statistics. Shipments in November were 35,399 tons as against 33,314 tons in October and 23,065 tons a year ago.

Stocks of lead in the United States at the end of November totaled 187,843 tons compared to 174,721 tons at the end of the previous month and 175,532 tons at the end of November last year.

The code of fair competition for the Lead Industries has been presented to the NRA by Clinton H. Crane and F. E. Wormser of the Lead Industries Association. Walter A. Jannsen was deputy administrator at the hearing when the code was submitted.

JUST AROUND THE CORNER



—Washington Daily News

The proposed code provides for a maximum work-week of 40 hours averaged over a thirteen-week period and minimum wages of 35 cents per hour "unless the hourly rate for the same class of work on July 15, 1924, was less than 35 cents," in which case 30 cents shall be the minimum. The minimum hourly rate for watchmen and cleaners is also 30 cents, but such class of employees is limited to five percent of the total number employed. Minimum wages for clerical employees are set at 40 per week during a one-month period but not more than 48 hours per week in any one week. The code also provides for an equitable adjustment of wages above the minimum not later than six months after the code's approval.

W. C. Holden, representing the American Federation of Labor, objected to the wages and hours provisions in the code and declared "there is real need for shorter hours and higher wages" in view of present circumstances and he filed with the deputy specific amendments he desired made.

Thomas H. Brown, of the Labor Advisory Board, declared that the maximum hours of 40, meant little to the mining employees in the industry. He pointed out that because of the time spent in traveling between the point of operation and the entrance to the mine, the code should provide maximum hours of labor taking this fact into consideration. He stated that unless such provision were made, miners would be actually working nine to ten hours per day and he recommended a 5-day week and a six-hour day.

Speaking to the section on wages, Mr. Brown expressed the belief that the 5 percent rate for basing the number of watchmen and cleaners was too high. Asserting that the proposed minimum wages were too low, he cited wage scales of 50 to 60 cents per hour for common labor in lead mining states of the west and he urged the classifying of employees above the minimum wage according to skill. Handicapped workers, he said, instead of being under a separate classification, should be included under the 30 cents minimum provided for cleaners and watchmen.

J. S. Gould of the NRA Labor Advisory Board supported the previous witness and asked for a maximum hour provision for watchmen. He urged the formation of an Industrial Relations Board to deal with problems concerning labor provisions of the code. Some qualified agency, governmental or otherwise, should be designated, he stated, to assist the industry toward determining standards for safety and health, as provided in the code.

L. Muscat, of the Standard Rolling Mills, New York City, offered several clarifying amendments to the fair trade practice section. Among other things, he urged that a slight tolerance be permitted in the posting of metallic content of composition scrap on invoices and quotations because of the costliness of adhering to a more exacting system, and he asked for an adequate provision against misrepresentation of products.

W. H. Edmonds, of the Consumers' Advisory Board, asked for representation on the Code Authority and requested an explanatory statement on Section 4 of Article VIII on why "uniform bases for sales" should be considered "beneficial to certain sections of the industry and not to others."

Deputy Jannsen, in recessing the hearing, announced a post-conference would be held later in the day for the purpose of discussing various objections made to the wages and hours sections of the code, and to discuss recommendations made by Advisers McFarland of the Legal Division, Berquist of the Research and Planning Division, Gould and Brown of the

Labor Advisory Board, Montgomery of the Industrial Advisory Board and Edwards of the Consumers' Advisory Board.

The hearing was recessed subject to the call of the Administrator.

Hearings on the proposed code for the zinc industry were held December 8 at the Washington Hotel, Washington, D. C. Deputy Administrator W. A. Jannsen had charge.

The proposed code fixes a minimum wage rate of 35 cents an hour in the mining division for the Eastern and Northwestern districts and 30 cents an hour in the Southern, Mississippi Valley and Southwestern districts; in the prime Western Smelting Division the minimum rate is fixed at 30 cents an hour for common or unskilled labor and \$2.75 per shift (of not to exceed 8 hours) for all other labor.

The minimum rate of wage for the high grade zinc division is fixed at 39 cents an hour; for the secondary zinc division 35 cents an hour and for the rolled zinc division, zinc alloy division, zinc oxide division, lithopone division and the sulphuric acid division each 35 cents an hour.

Watchmen and partially incapacitated employees shall receive five cents per hour less than the rates specified above, but in no case less than 30 cents an hour. The minimum wage for office, clerical or sales employees is fixed at not less than \$14 per week. The minimum rates of pay are established regardless of whether employees are compensated on a time rate, piecework or other basis.

The proposed code will establish a 42-hour-week averaged over a period of 13 weeks, but in no case to exceed 546 hours in any 13-week period. Office, clerical and sales employees would work not more than 40 hours per week averaged over a 13-week period. The maximum working hours shall not apply to executives and their immediate assistants, outside sales men, supervising, technical, maintenance and engineering staffs; accidents or emergencies where the safety of the men or the preservation of the property necessitates temporarily longer hours and to hoistmen, powerhouse men and pump men in the Mining Division.

Iron and Steel

EXECUTIVES who direct the steel industry were called upon to face many new and difficult situations in the past year, but today the outlook is considered much more promising than it has been in at least two years.

World pig-iron production during 1932 was placed by the Bureau of Mines at 39,200,000 tons, including ferro-alloys. This was a decrease of 30 percent from 1931 and of 52 percent as compared to the 1927-1931 average. United States output accounted for 27 percent of the total as against 33 percent in 1931.

A total of 1,008,507 tons of iron and steel products was exported from the United States in the first ten months of the current year compared with 484,492 tons in the corresponding period of 1932, according to the Commerce Department.

THE MENACING OVERHEAD



—Washington Post

Scrap shipments, amounting to 594,763 tons, accounted for the greater part of this gain, but other items, notably sheet products and tabular goods, showed a total increase of 97,418 tons.

The export total for the month of October, amounting to 164,755 tons, was 55,956 tons in excess of the September figure. Scrap exports contributed 81,176 tons of this total, but in addition, 15,448 tons of tin plate, 9,228 tons of galvanized steel sheets, and 6,971 tons of heavy rails were also exported.

Japan and Italy were first and second markets of the month as a result of large scrap purchases. Canada ranked third, while Argentina and Brazil showed marked strength, taking 14,040 and 13,029 tons, respectively, of a variety of products.

During the first ten months of 1933 imports of iron and steel products into the United States amounted to 354,501 tons compared with 314,100 tons in the corresponding period of 1932. The increased import trade resulted chiefly from increased receipts of scrap, pig iron and ferro-manganese. October imports, however, were more than 9,000 tons under the September figure. The chief import items in this month were pig iron, scrap and ferro-manganese, with Canada the principal source of origin.

High production costs have served to limit German prospecting for new iron ore deposits, according to the Commerce Department.

At the present time, it is stated, Germany is largely dependent on foreign ores, a situation which it is claimed in Germany is particularly serious in consequence of her present foreign political situation.

Before the war, Germany ranked next to the United States as the chief world producer of iron ore. The loss of Alsace Lorraine, her chief production area, caused her to drop to sixth place. In 1929, the peak post-war year for iron ore output, Germany produced 6,400,000 metric tons compared with an average

annual pre-war production of more than 28,000,000 tons.

At the present time, iron ore is extracted in nine different districts of Germany, of which the Siegerlaender and Wiederauer district is the most important. The mining of domestic ores during recent years, the report states, has been financed partly with government subsidies. The output at the present time is small, but larger quantities could be extracted as soon as the German steel producing industry displays greater activity.

Considering the relatively short life of the German deposits, it is not considered advisable to extract ores on too broad a scale. Government subsidies are said to be essential for prospecting for new deposits. In view of the low level of world prices, the possibility of increasing the output to its pre-war level is claimed to be dependent upon such governmental relief measures as lower freight rates, social dues and other measures.

Production of iron and steel in Germany during October was nine percent above September, according to advices to the Department of Commerce. Of the 155 blast furnaces in Germany, 50 were in operation during October as against 46 in the previous month.

The Department has been informed by its office in Prague, Czechoslovakia, that Russia is diverting its orders for iron and steel products from Germany to Czechoslovakia. An important Czechoslovakian iron works recently received orders from Russia for 6,500 tons of rails and 8,700 tons of sheet iron and another company has just received orders for 3,500 tons of rails. Terms of payment in both cases were between 18 and 21 months, although previously payments were extended over a period as long as four years. Russian officials are also negotiating for lower freight rates on exports from Czechoslovakia.

Notable improvement was registered in British foreign trade in iron and steel during October. Exports amounted to 193,613 gross tons, an increase of 36,246 tons over September. Shipments of galvanized sheets accounted for more than half of the gain. Increases also occurred in ingots, steel bars, structural steel, plates, tin plate and cast pipe.

Imports into Britain rose from 80,342 tons in September to 88,854 tons in October. Gains were registered in pig iron, ingots, steel bars, hoops and wire nails.

British production of pig iron in October totaled 373,300 tons, an increase of 13,600 tons over the September output. Steel production was 668,300 tons, a decline of 600 tons from the September output. There were 74 blast furnaces operating at the end of October which was the same as a month previously, while 15 additional open hearths had been lighted, bringing the total in operation to 229.

Possibilities of a great steel industry in the North Pacific Coast, near the Canadian border, are being envisioned by business men in the State of Washington through the power to be made

available by the Grand Coulee Dam. It is claimed that the only strictly Bessemer iron ore range in the United States is in this Region and that unlimited quantities of high-grade manganese and chrome ore, coking coal and limestone are to be found close by. Deposits of low grade gold, copper, lead, silver and zinc ores also abound in the region and could be extracted at a profit with low-price power, it is said. Consumption of iron and steel goods in the Pacific Coast area is estimated at approximately \$400,000,000 annually and would justify the erection of plants for production of steel which could be made at \$5 to \$10 a ton less than at Pittsburgh, according to local interests.

Imports of iron and steel products into the United States during November amounted to 28,979 tons as compared with the 46,673 tons imported in October and 34,924 tons for November, 1932, according to figures compiled in the Commerce Department's iron and steel division.

Canada continued as the chief source of United States imports of iron and steel products, supplying 13,264 tons or 46 percent of the total during November. Other outstanding sources were Belgium, India, Germany, and Sweden.

Imports of iron and steel products during the first 11 months of the current year totaled 383,480 tons compared with 349,024 tons for the corresponding period of 1932. Pig iron has constituted the leading item in this trade, accounting for 37½ percent of total receipts.

Steel operations following the Christmas holiday were estimated at 37 percent of capacity by *Iron Age* which expected some tapering off toward the end of the year. The publication regards the first quarter outlook for 1934 as favorable because of excellent prospects for tonnage from automobiles, public works and railroads.

Skills Review says that a total of 40,307,893 net tons of freight passed to and from Lake Superior, through the ship canals at Sault Ste. Marie, Michigan and Ontario, during the season of navigation in 1933. This compares with 20,480,873 tons in 1932, a gain of 97 percent. This extraordinary right about face in lake traffic in a single season is one of the most important pages in the history of recovery of business and industry during 1933. And it is of further interest at this time that there is every assurance that the freight traffic of the ship canals at the Sault will register a grand total of about 55,000,000 tons in 1934.

Maintenance of Mining Machinery

(Continued from page 32)

pairs to chain machines and conveyors which are too extensive to be made during the working shifts. A list of these tasks for the shift is usually placed in these men's hands at the beginning of their shift by the head conveyor electrician.

At conveyORIZED mines, pumps, hoists, rock drills, power shovels, pipe lines, and other machines and equipment not directly connected with conveyor mining are kept in repair by electricians who do not, as a rule, work on conveyor equipment. These men are under the directions of the mine foreman or the head electrician, and they function in the same manner as they would at mines that are not conveyORIZED.

All of the mines are equipped with a machine shop, either inside near the center of the live workings or outside near the mine portal. This machine shop is equipped with a traveling hand crane, a power-driven drill press, a grinder, a workbench with vise, the necessary hand tools and shelving for supplies, machine supplies, and usually the spare machines and the larger spare parts, are kept at this machine shop, and the larger repair jobs done at the mine are done in this shop. A well-equipped central machine shop, under the supervision of the electrical department, is maintained for general machine shop work for all the mines. Repair jobs too large or too difficult to be done at the mines are done at this shop. Some supplies which are found to be convenient and economical to make are made here.

No distinction is made between electrical and mechanical work, the electricians doing the maintenance work having been trained to take care of the mechanical and electrical parts of the machinery under their supervision. A school is conducted for giving the electricians the practical training they require to do this work.

An endeavor is made to anticipate and prevent breakdowns by making necessary repairs at the proper time. Competent inspectors from the electrical department inspect all inside equipment and machinery twice each year. They report their findings and recommendations for each machine in duplicate on a form provided for the purpose, the same procedure being followed as has been described for mine locomotives.

The company sponsors a Machinery Maintenance Association which meets monthly and limits the length of its sessions to one and one-half hours. The superintendent of the electrical department presides at these meetings, and they

are attended by the mining engineer and his assistants, the division superintendents, the storekeeper, the mine foremen, the motor bosses, the key men of the electrical department, the motor barn electricians, and the mine electricians. Practical problems relating to the promotion of efficiency in machinery repair work are discussed in these meetings. New devices and new methods which have been found advantageous are exhibited, discussed, and explained here. The service that is being rendered by the different machines and the difficulties encountered in their repair and operation are discussed. Data on failures of supplies, tools, and machines are given and remedial suggestions are made. General policies in regard to repair work are announced and specific instructions and demonstrations of new work with which the electricians are not familiar are given. The subject of ordering and the delivery of supplies to the mines is discussed. Any question arising in this meeting involving the subject of safety is referred to the central safety committee.

The central safety committee also considers the economy and safety of possible improvements to machinery and equipment on hand and makes recommendations as to the advisability of applying such improvements. It is frequently desirable to take advantage of new improvements brought out by manufacturers of equipment, and if the central safety committee passes favorably on such improvements and the recommendations are accepted by the management, they are applied gradually when it is feasible to do so.

The successful system of maintenance of mining machinery and other underground equipment outlined in this paper depends, as any other system would, upon the careful selection and training of personnel and close cooperation between different departments involved.

Grosvenor House Goes "Back to Coal"

Digest of Article from "Colliery Guardian," December 8, 1933

GROSVENOR HOUSE, London's largest and most modern hotel, has completed its preparations for the conversion of its boiler-houses from foreign oil to coal, and from December 4 is burning British coal, at a saving of nearly £2,000 a year to the management. Hitherto, the four boilers which supply the building with 1,000,000 gal. of hot water a week for heating and washing purposes, have consumed every year 3,000 tons of oil, obtained from abroad, which will now be replaced by coal.

HAVE YOU HEARD—?

SECRETARY OF LABOR PERKINS recently announced a 10-point program for the improvement of labor which includes permanent limitation of hours; prohibition of child labor; minimum wages for women; safe and healthy working conditions; old age pensions; unemployment reserves; workmen's compensation; free public employment bureaus; stronger administration of labor laws; and permanent improved labor conditions.

ACCORDING to Secretary of the Interior Ickes, 5,000,000 men have been re-employed by all agencies, financed by P. W. A. funds; 10,000 projects carrying an appropriation of almost \$3,300,000,000 are under way.

DEPARTMENT OF COMMERCE announces that plans for a census of American business are nearing completion. The census will canvass some 2,400 establishments as to volume of business done in 1933, total number employed, amount of payroll, and stocks of goods on hand. Survey will cover amusement, hotel, and retailing and wholesaling businesses. It will exclude agriculture, manufacturing and construction.

PRESIDENT of the American Federation of Labor William Green, says that labor will demand that NRA and the National Labor Board shall declare company sponsored labor organizations outlawing. He demands that they take court proceedings against such organization on the ground that employers' support is prohibited by the National Recovery Act.

PRESIDENT ROOSEVELT's silver policy has resulted in the principle mining companies in Mexico ordering full time operation. In 1932 Mexico produced 39 percent of the world's total silver output.

ON JANUARY 1 the Government will begin a campaign to induce farmers to make a further reduction in their 1934 cotton acreage. This campaign will attempt to obtain agreements to take 5,000,000 acres from the area that was left for cultivation in 1933. This will limit the plantings of cotton to 25,000,000 acres. Farmers have already withdrawn more than 10,000,000 acres from production. It is estimated that the campaign will cost \$125,000,000.

NRA's REPORT on the steel industry shows that a survey of steel companies indicates that 208 of the 237 companies in the industry for the June to September period increased employment by 73,000 workers and payrolls at the rate of \$78,000,000 a year.

ACCORDING to the Anthracite Institute, Federal relief orders aggregating 2,000,000 tons to the Anthracite industry will give 5,000 miners and 1,000 railroad employees a full year of employment.

THE ILLINOIS STATE LEVY BOARD has voted to eliminate the state property tax. It is estimated that this action will save Illinois property owners approximately 35,000,000 dollars. Governor Hornor states that this means that for the first time in 115 years that real estate and personal property owners will be relieved of paying a state property tax. As a substitute the state will levy a 2 percent tax on gross sales of retail merchants which they estimate will average \$3,000,000 monthly.

SENATOR REED of Pennsylvania says that President Roosevelt has made four major mistakes in his monetary policy as follows: favoring Thomas amendment; repudiating gold clause in Government securities; adopting Professor Warren's policy of gold purchases; and the policy of buying and coining of newly mined silver.

SENATOR FLETCHER, Chairman of the Senate Banking and Currency Committee states that his committee is considering a plan for licensing stock-brokers under the Securities Act through Federal control of the mails. Plan is said to be based on Justice Brandeis' book "Other People's Money."

GENERAL ELECTRIC COMPANY announces that more than \$10,000,000 has been paid to employees and families of employees of the company under group life insurance plans; 4,360 families have been recipients of these payments which represent an average to each beneficiary of more than \$2,000.

THE ALASKAN BRANCH of the Geological Survey says that the production of minerals from Alaska mines in 1933 had a value of \$11,457,000, as compared with \$11,638,000 in 1932. This brings the value of the mineral output of Alaska since 1880 to \$664,686,000. The figures for 1933 are preliminary estimates and subject to revision.

THE BUREAU OF MINES releases data upon safety records of 1931 and 1932.—A low record for mine accidents in both coal and metal mining was made in 1931, and the rate in 1932 was almost identical, although, in the past, periods of financial depression with recession of activity in mining have been almost invariably accompanied by sharp increases in such accidents. In 1931, 1,463 persons were killed in the coal mines of the United States, and tentative figures for 1932 give 1,166, to be compared with an average of 2,049 annually for the previous 25 years; the 1931 fatality rate of 3.31 persons killed per million tons of coal produced is the lowest in the present century, and that for 1932 appears to have been about the same.

To June 30, 1933, Bureau of Mines certificates had been issued to 1,037 mineral plants, indicating that all employees have received the first-aid course. During the past fiscal year, 231 of these 100-percent certificates were issued, covering the training of 38,852 persons.

First-aid instructors' certificates numbering 1,196 were issued to persons in 26 states and Alaska; Pennsylvania led with 625, Kentucky was second with 161, Alabama third with 108, and West Virginia fourth with 97. The 55 members of the safety division of the Bureau giving first-aid training are yearly bringing the full course of first-aid to between 70,000 and 100,000 persons in the mineral industries.

THE NATIONAL RECOVERY ADMINISTRATION has announced that a public hearing on the proposed code of fair competition submitted by the Code Committee claiming to represent 94 percent of the Gypsum industry, will be conducted by Deputy Administrator Malcolm Pirnie beginning at 10 a. m., Tuesday, January 9, 1934, in the ballroom of the Powhattan Hotel.

The code provides a 40-hour maximum work week, except during peak periods and emergencies, when the limit shall be 48 in any one week and, for a six-month's average, not to exceed 40. Employees in technical, executive and emergency repair capacities receiving more than \$35 per week are excepted, as are outside sales and service men. Watchmen, engineers and firemen may work up to 56 hours per week, or 84 over any two weeks period.

Minimum wages range from 30 to 40 cents per hour, varying with sizes of cities and geographical locations. Wages of office workers range from \$12 to \$15 per week.

PERSONALS

HOWARD I. YOUNG, President, American Zinc, Lead and Smelting Company, was elected president of the American Mining Congress at its annual meeting held in Washington December 13 to 16.

ARTHUR B. BENDELARI, President, Eagle Picher Lead Company, was in Washington early in December for conferences with officials of the Interior Department on matters of importance pertaining to his company.

ROBERT M. BETTS, well-known mining man of the Pacific Northwest, has returned to his home in Oregon after an extended eastern trip which included Washington and New York.

DONALD A. CALLAHAN, President of the Callahan Zinc-Lead Company, of Wallace, Idaho, who has been spending some time in the East, in New York and Washington, spent the Christmas holidays with his family in Chicago.

Announcement has been made of the recent marriage of Miss Helena Casey, formerly of the staff of the American Mining Congress to Herbert Wilson Smith, Union Carbide and Carbon Corporation, New York City.

JULIAN D. CONOVER, Secretary of the American Zinc Institute, was in Washington several days early in December in relation to the hearing on the codes for the lead and zinc industries.

CLINTON R. CRANE, President of the St. Joseph Lead Company, attended the hearing on the lead industry's code held before NRA officials in Washington early in December.

ROSS D. LEISK, Assistant General Manager of the United Verde Extension Mining Company, presented an interesting and very comprehensive paper on the copper industry of Arizona at the annual meeting of the American Mining Congress.

S. L. MATHER, and Mrs. Mather, Cleveland-Cliffs Iron Company, of Cleveland, attended the annual meeting of the American Mining Congress.

WILLIAM YOUNG WESTERVELT, President of the Ducktown Chemical and Iron Company, was one of the speakers in relation to the 30-hour week in industry presented to the December meeting of the American Mining Congress.

A. W. DICKINSON, of the staff of the American Mining Congress, with Mrs. Dickinson, spent the holiday season at the Homestead, Hot Springs, Virginia.

DR. GEORGE OTIS SMITH, former director of the U. S. Geological Survey, and chairman of the Federal Power Commission, was toastmaster at the annual informal dinner during the December meeting of the American Mining Congress.

W. J. JENKINS, President of the Consolidated Coal Company of St. Louis, spent several days in Washington the early part of December attending the meeting of the American Mining Congress and participating in the negotiations on coal prices between the Illinois and Indiana operators.

DONALD B. GILLIES, President, Corrigan-McKinney Steel Company, told the members of the American Mining Congress that "despite greatly reduced operations, the steel industry is giving employment under its code to more than 400,000 workers, almost as many as in 1929." He also said that evidence is accumulating that steel mill operations have passed their lowest point in the depression, and that improvement is probable over the next few months.

RALPH M. ROOSEVELT, Vice President of the Eagle Picher Lead Company, was in Washington during the hearings on the lead and zinc codes.

EUGENE MCAULIFFE, President of the Union Pacific Coal Company, made a strong plea at the meeting of the American Mining Congress in the favor of the U. S. Bureau of Mines. He has been appointed as national chairman of a special committee to confer with Government officials and members of the mining industry looking to a strengthening of the facilities and work of the Bureau.

DEAN E. A. HOLBROOK, School of Mines, University of Pittsburgh, represented the Coal Mining Institute of America in the discussion on the Bureau of Mines at the annual meeting of the American Mining Congress and urged the widest cooperation between mining men, The American Mining Congress and the Bureau.

MILTON H. FIES, Vice President of the DeBardeleben Coal Corporation, presented a strong plea for the mining industry of the South in favor of the activities of the Bureau of Mines. Mr. Fies is interested in the President's Re-Employment Program in the South.

JAMES R. KNAPP, Union Carbide Company, presented an interesting paper to the tax sessions at the recent meeting of the Mining Congress on "International Double Taxation."

W. N. DAVIS, President of the Phillips Oil Company, is a frequent Washington visitor on matters pertaining to the oil code.

ARTHUR NOTMAN has resigned as special advisor on copper for NRA.

CHAS. E. SEGERSTROM, Sonora, California, was elected to the Board of Directors of the American Mining Congress at its annual meeting.

P. G. BECKET, Vice President, Phelps Dodge Corporation, and DEAN MILNOR ROBERTS, of the Mining Department of the University of Washington, prepared interesting discussions on the Bureau of Mines as a part of the program on this subject at the annual Mining Congress meeting.

Among the Government officials who addressed the 36th Annual Convention of the American Mining Congress were the Honorable Henry T. Rainey, Speaker of the House of Representatives; the Honorable M. M. Logan, Chairman, the Senate Committee on Mines and Mining; the Honorable Key Pittman, Chairman of the Senate Committee on Foreign Relations; the Honorable Frank Crowther, Representative from New York; E. B. Prettyman, General Counsel, Bureau of Internal Revenue.

GEO. C. CROSSLEY, President of the American Clay Association, presented an interesting paper on the "Clay Industry and NRA" to the annual Mining Congress meeting.

D. D. COWIN, President of the Bell and Zoller Coal and Mining Company; GEORGE REED, Vice President of the Peabody Coal Company; D. W. BUCHANAN, President of the Old Ben Coal Corporation; together with a number of Illinois and Indiana operators sent several days in Washington early in December in an effort to agree on a price program for Illinois-Indiana coal under the bituminous code.

FRANK G. FREY, Acting Director of the Anthracite Institute, has been appointed agent of the Federal Surplus Relief Corporation. Mr. Frey will allocate among mining company members of the Institute Federal orders for some two million tons of anthracite coal.

HOWARD COONLEY, has been re-elected president of the American Standards Association for the year 1934. Mr. Coonley is president of Walworth Company of New York.

Call Issued for Seventeenth Annual Meeting, Colorado Chapter of the American Mining Congress, and the Twenty-first Annual Meeting, the Colorado Mining Association

"BY AUTHORITY of the Executive Committee, notice is hereby given that the twenty-first Annual Meeting of the Colorado Mining Association and the 17th annual meeting of the Colorado Chapter, The American Mining Congress will be held with the Colorado Chapter of the American Mining Congress in Pueblo, Colorado, January 18 and 19, 1934, convening Thursday morning, January 18th, at 10 a. m., in the Congress Hotel.

"Each mining county in the state will be entitled to send five or more delegates, but in no case shall any county cast more than five votes if roll-call is demanded. The State Commissioner of Mines, the president of the School of Mines, the chief Colorado representatives of the U. S. Bureau of Mines and of the U. S. Geological Survey, shall be delegates at large, and entitled to one vote each.

"County mining organizations affiliating with the State Association or commercial organizations in counties where no such organizations exist, are urged to appoint delegates and see that their county is properly represented at the convention.

"Delegates should be selected not later than January 12th, and the list, together with the designation of a member to represent the county on the Board of Directors of the State Association, should be forwarded to the undersigned secretary, at Denver, promptly."

THE ROCKY MOUNTAIN COAL MINING INSTITUTE in an official letter to members, announces that its annual meeting will be held sometime in February.

L. R. Weber, of Salt Lake City, is president of the Institute.

THE NORTHWEST MINING ASSOCIATION, in annual convention at Spokane, adopted a resolution proclaiming confidence in the leadership of President Roosevelt, and "pledging cooperation individually and collectively, in whatever measures the president deems necessary in this period of national emergency."

They also adopted a resolution for the remonetization of silver at a rate of 16 to 1 of gold, without waiting for foreign cooperation. The resolution, which was a redrafted version of that adopted by the Wallace (Idaho) Board of Trade, was introduced by James F. McCarthy, president of the Hecla Mining Co., contends "the reestablishment of bimetalism on the basis which existed for the first 97 years of this republic, would place millions of workmen back into the ranks of the employed * * *. With the United States the major world power, it is now in a position to settle its own monetary policies without dictation from the international bankers or the governments of the old world."

Roy H. Clarke was elected president of the Northwest Mining Association for the ensuing year. Leon Starmont was elected vice president, Charles F. Robbins secretary and F. Cushing Moore treasurer, all residents of Spokane.

ANNOUNCEMENT was made at the annual meeting of The American Mining Congress of the selection of San Francisco, California, and the week of September 24 for the holding of the annual Western Division meeting for 1934. An exposition of mining equipment and supplies will be held in conjunction with this convention. Announcement of the chairman and the program committee will be made shortly by Mr. Howard I. Young, president of The American Mining Congress.

JOHN E. NELSON has been appointed manager of Northern Ore Mines for the Republic Steel Corporation. Mr. Nelson fills the vacancy occasioned by the death of F. J. Webb.

CARL ZAPFFE, manager of iron ore properties for the Northern Pacific Railway Co. at Brainerd, Minn., attended the 36th annual convention of the American Mining Congress held at Washington, D. C., on December 15. Mr. Zapffe stated that the topic which drew most attention was the new legislation being prepared by the Ways and Means Committee of Congress, proposing changes in the Internal Revenue Act, especially that section of the Act which intended to reduce, and perhaps annul, the benefits of deductions for depreciation and depletion. Producers of minerals need be seriously concerned.

Other men connected with the iron ore industry attending the meeting were S. L. Mather, vice president and V. P. Geffine, secretary, Cleveland-Cliffs Iron Co., D. B. Gillies, president, Corrigan McKinney Steel Co., and R. C. Allen, vice president, Oglebay-Norton & Co., all of Cleveland.

(Skillings Review)

THE AMERICAN MINING CONGRESS has appointed a national committee to confer with Secretary of the Interior Ickes in relation to the United States Bureau of Mines. This committee is headed by Mr. Eugene McAuliffe, president of the Union Pacific Coal Co.; Dean E. A. Holbrook, of the University of Pittsburgh; Milton H. Fies, vice president of the DeBardeleben Coal Corp.; Chas. M. Moderwell, a Chicago coal operator; Cleveland E. Dodge, vice president of the Phelps Dodge Corp.; Howard I. Young, president of the American Zinc, Lead & Smelting Co.; and John L. Lewis, United Mine Workers of America. A meeting of the committee will be held early in January.

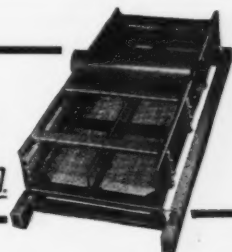
G. R. DRYSDALE has been appointed Comptroller, the Phelps Dodge Corporation and will hereafter make his headquarters at the New York office of the company.

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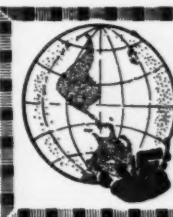
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The Taxpayers' View-point

(Continued from page 15)

troverted matters nearly always offend someone—a superior officer who doesn't agree with you—a taxpayer with politically powerful friends—a politically hostile critic—a future investigating committee. Ergo, before every administrator, who wants to keep his job, the temptation is ever present to avoid decision, to postpone announcement until he can make it with more apparent safety to himself, or, better yet, to pass the problem on for someone else to decide. There is always this little devil of the "buck" whispering "Pass me along," "Pass me along," at the ear of the most intelligent and the wisest administrator. Indeed, in some situations, the more intelligent and the wiser the administrator, the more insistent the little devil becomes.

When the taxpayer is right in his contention, the greater is his need for this courage in the administrator; the larger, also, the amount involved is, the greater is the courage required. When your salary is some place between \$6.00 a day and \$24.00 a day, to make the decision that a taxpayer doesn't owe the million dollars which your associates have claimed that he does owe, requires intestinal fortitude.

Again, each of us wants to be assured that the men who make these decisions are just as ready to hold for the Government when they are faced with a taxpayer whose position and influence may mean a disastrous disfavor to the man who turns him down. If courage is lacking in the administration in such a situation, all the rest of us suffer. The quality we insist upon in these men who apply our laws is the stuff that it takes to make a man.

What about honesty? That's easy. Youthful as I feel, I have lived long enough to discover that when real intelligence and courage get together in a character, there isn't any room for dishonesty. Some may quarrel with this but much wiser men than I will ever be, won't demur.

Given prompt decisions, access afforded the taxpayer to the men who are actually to make the decisions, a spirit of settlement rather than "fight" in the administrator, and men with intelligence and courage to put these principles into effect, the assertion is ventured that you will find even a badly designed statute bearable. Many a bad tax has been accepted because of the good sense followed in its application.

These remarks have probably sounded like a "fight talk" between the halves, to a squad of candidates for jobs in the Bureau of Internal Revenue. The sentiments may be obvious too. It is important, however, to remind ourselves that

when we are puzzled and sometimes irritated and annoyed with these fellows who come prowling through our books, challenging our statements of fact and rejecting our obviously sound contentions, that they have their problems too. It may not be an entire waste, either, when someone is asked to express the taxpayer's point of view, to have it said that while the taxpayer has ideas on improving the machinery of tax administration, what he wants more than anything else is the continuance of men in office who are sufficiently intelligent and courageous always to give us a "square deal," fearlessly dealt.

The Bureau as a Practical Aid to Mining

(Continued from page 43)

I have followed the work of the Safety Branch very closely ever since I left the service, know the work they have been doing, and am acquainted with the men in charge of the work during the intervening years; and in the light of this knowledge I have no hesitancy in saying that the character of the work they have been doing in the last few years and its value to the industry from the standpoint of accident prevention and the efficiency and character of its personnel has never been surpassed at any time in the history of the Bureau.

I, therefore, rate the Bureau's health and safety work as its most important work; and it should not be overlooked that the Bureau's health and safety work receives world-wide recognition.

The Bureau's research work should rate second in importance, and it is my opinion that the Bureau's research work should be directed more definitely along the lines of health and safety because many of their other fields of research are invading or approaching commercial work and I feel that the Bureau should keep out of those controversial fields.

I rate the work of their economical branch, and particularly their mining statistical division, as third in importance. If the Bureau confines its work to these three activities, it can perform a useful service to the industry and the mineral industry certainly should support it and show a kinder and more helpful interest than they have in the past.

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A NEW illustrated catalogue has been completed by Link-Belt Company, 519 N. Holmes Ave., Indianapolis, on flexible shaft-couplings. Three different types are tabulated and priced, with special emphasis on type "RC" which employs Link Silverlink Roller Chain for flexibly connecting the two toothed coupling halves. Both revolving and stationary types of automatic-lubricating casings are included.

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CEMENT GUN COMPANY, INC., Allertown, Pa., announce a new bulletin No. 200.

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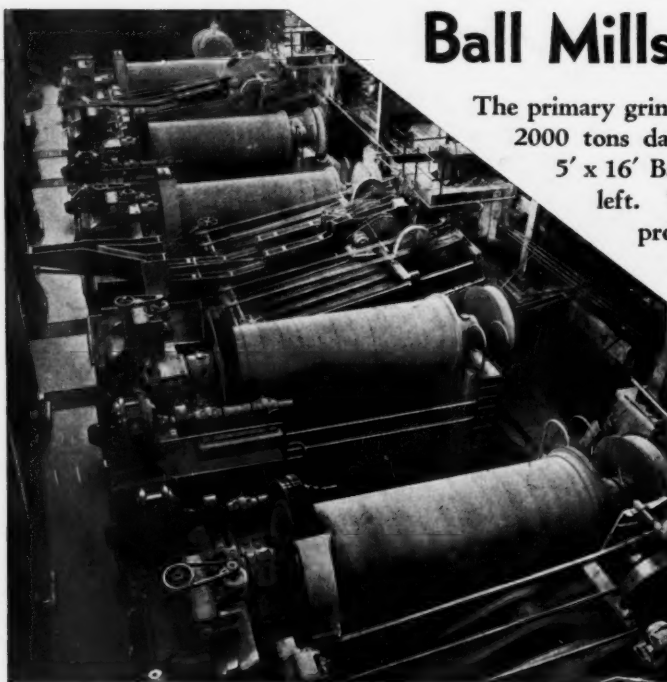
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McIntyre Porcupine Mines Ball Mills

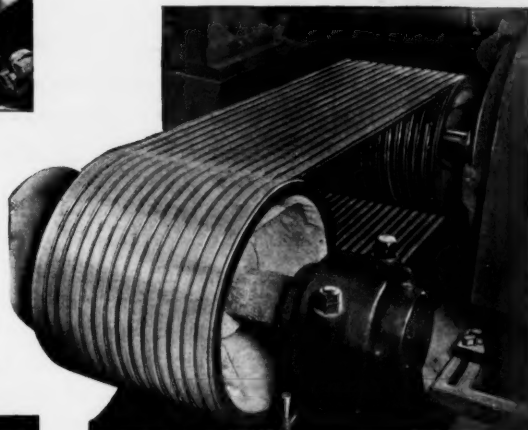
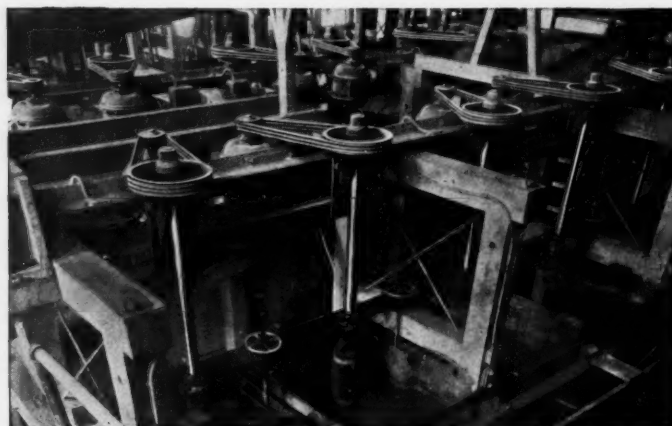


The primary grinding mills in the McIntyre Porcupine plant, 2000 tons daily capacity, consist of five Allis-Chalmers 5' x 16' Ball Mills as shown in the illustration on the left. These mills receive a feed of $\frac{1}{4}$ " and the product is 65 mesh. Two similar mills in the regrinding section are used for grinding flotation concentrates.

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